



2025 International Thin Films Conference

國際鍍膜科技研討會

2025.10/26 ▶ 10/29

Organized by

- Taiwan Association for Coating and Thin Film Technology (TACT), Taiwan
- Department of Materials and Mineral Resources Engineering, National Taipei University of Technology (Taipei Tech), Taiwan

Sponsored / Endorsed by

- American Vacuum Society (AVS)
- Korean Vacuum Society (KVS)
- Thin Films Society (TFS)
- Japan Society of Vacuum and Surface Science (JVSS)
- Taiwan Vacuum Society (TVS)
- National Science and Technology Council (NSTC), Taiwan
- National Center for Instrumentation Research (NCIR)

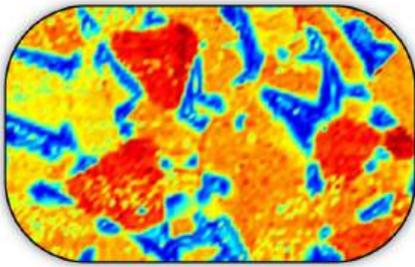
Full Brochure



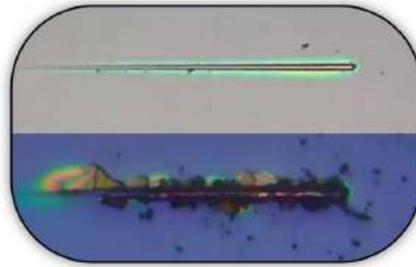


Rapid Mechanical Properties Mapping

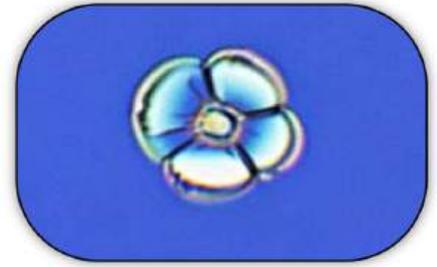
Flexibility | Accuracy | Stability



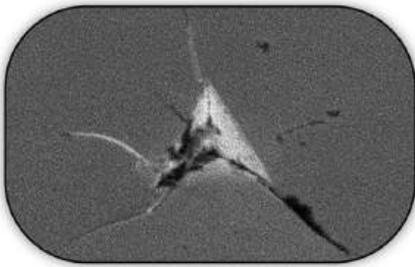
Hardness Mapping



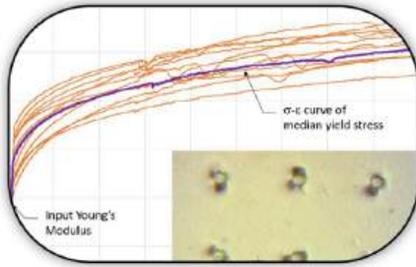
Scratch Testing



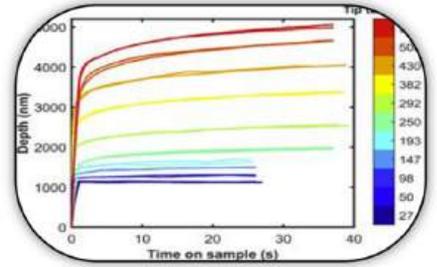
Delamination



Fracture Analysis



Stress-Strain



Materials Creep

Contact us with your measurement requirements!



iMicro, iNano®



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- ◆ 金屬單晶用於表面物理實驗，各種氧化物單晶，如：氧化鋯、氧化鎂、鋁酸鋰、鈦酸鋇用於高溫超導體等用於紅外線穿透之各種基板。
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- ◆ 氧化鋁、氧化鋯、氮化矽管、棒、片材等各種高溫絕緣材料。
- ◆ 真空耗材，如：鉬、鎢、鈾、氮化硼、Vitreous Carbon、PBN 材質之舟、坩堝用於耐高溫特殊鍍膜製程及膜厚監控片。
- ◆ 其他量測分析用材料，如：導電膠、測溫線等
- ◆ 新型二維半導體材料之粉體、單晶體及薄膜基板，如：Graphene, MoS2, WSe2, hBN 等
- ◆ 各式奈米粉體、奈米碳管、奈米分散液。



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Rigaku Solutions for Structure Determination and Rietveld Refinement

X-ray diffraction plays a crucial role in metallurgy, geology, materials science, facilitating the characterization and development of advanced materials with tailored properties.



SmartLab



MiniFlex

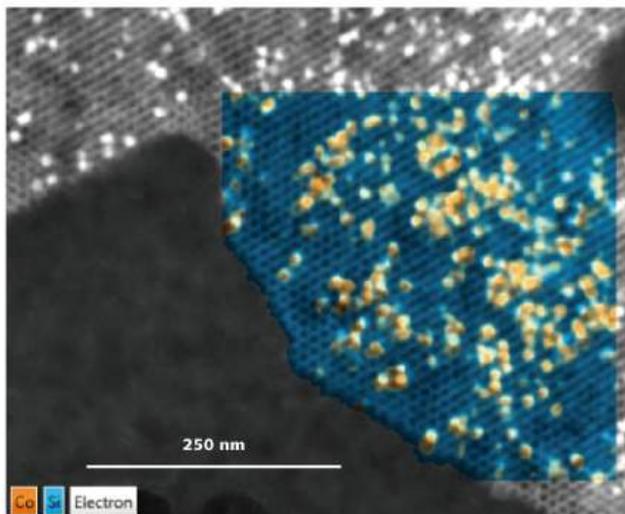


Achieving Nano-scaled EDS Analysis in a SEM with a Detector for Transmission Scanning Electron Signals



Seeing beyond

ZEISS integrates thin film coating analysis using EBSD for various applications, especially in materials science and manufacturing, with systems like the ZEISS GeminiSEM and ZEISS Crossbeam combining FIB/LaserFIB for rapid sample preparation. While thin film metrology systems from ZEISS measure coating properties like thickness and spectra, EBSD specifically analyzes the crystallographic microstructure of thin films and coated materials, revealing grain size, orientation, and boundaries essential for understanding material performance and durability. Advanced techniques include 3D EBSD for tomographic analysis and in-situ sample cleaning with the ZEISS CC system to improve analysis of non-conductive thin films.



How ZEISS supports EBSD analysis of thin films:

Advanced SEM Systems: ZEISS offers high-resolution scanning electron microscopes (SEMs) like the GeminiSEM, which are equipped for fast and detailed EBSD analysis.

FIB/LaserFIB for Sample Preparation:

FIB-SEM: A focused ion beam (FIB) is used for serial sectioning and micro-milling to create surfaces suitable for EBSD analysis, especially for 3D EBSD on materials like steels.

LaserFIB: This system uses a femtosecond laser to rapidly ablate material, allowing for quicker surface preparation and access to buried features for EBSD mapping without time-consuming polishing.

In-Situ Cleaning: The ZEISS CC (Carbon Contamination) system can clean carbon contamination from the sample surface directly within the microscope using an oxygen-flooding process, ensuring clean surfaces for EBSD.

Integrated Analysis: ZEISS systems can integrate EBSD with other techniques, such as Energy Dispersive X-ray Spectroscopy (EDS) for chemical information, enabling simultaneous crystallographic and chemical analysis for phase identification.



光磊企業有限公司專注於提供高品質測試設備的銷售與專業服務，致力於協助各領域的研發單位與製造業者，提升產品驗證與品質控制效能。我們秉持專業、誠信、創新的理念，深耕測試技術領域，持續為客戶帶來穩定可靠的解決方案。

主要產品包含：

- 力學/模擬測試設備：提供電液、機電、靜電等高精度控制與多樣化測試模組，廣泛應用於基礎材料力學、多軸結構測試、振動測試與擬真設備等。
- 環境可靠度測試設備：模擬各種溫濕度、氣候與應力條件，用於產品耐候性與可靠性驗證。
- 奈米壓痕測試設備：專為微觀尺度材料性質量測設計，適用於材料科學與半導體相關應用。
- 傳感器/數據採集器：涵蓋多種加速規、壓力計、負載等傳感器，搭配高效數據擷取與分析系統。

力學/模擬測試

MOOG



數據採集

DEWESoft



各類傳感器

Dytran by HBM



電動試驗設備

STEP LAB



奈米壓痕測試

KLA



高頻振動測試

STI



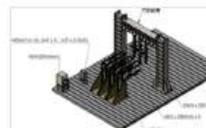
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Precursor for ALD/CVD (semiconductor)
Main Business



SK 65% ICIC 35%
Shareholders



Jung-hwan Hah
President & CEO



Sejong-si (10,290m²),
 Icheon Office, Wuxi Office
Location



27th July 2016
President & CEO



180
Employees



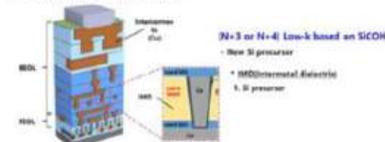
250 million won
 (USD 21,620K)
Capital



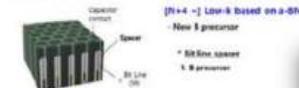
CpHf, CpZr, PMCPtI, BTBAS,
 3DMAS, OMCTS etc.
Products

● Precursor Portfolio in Device Architecture

◊ IMD (Intermetal dielectric) Structure



◊ Bit Line Spacer Structure

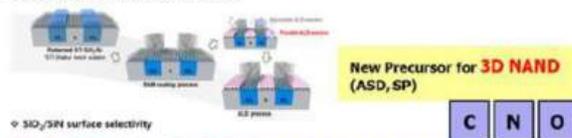


New Precursor for DRAM Low-k (IMD & Spacer)



New Precursor for DRAM High-k (Capacitor, Interface, Electrode)

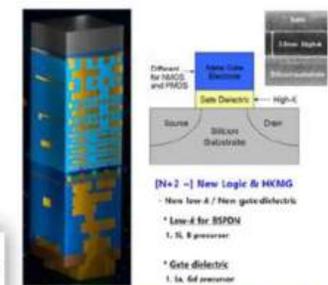
◊ ASD (Area Selective Deposition) basic concept



◊ SiO₂/SiN surface selectivity



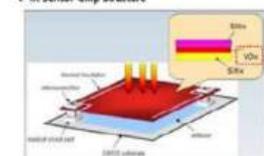
◊ Logic & HKMG structure



New Precursor for Logic/HKMG (Gate dielectric, BSPDN)



◊ IR Sensor Chip Structure



Periodic Table of the Element																	
H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra																
Legend: Feasibility test (yellow), Candidate Precursor (red), ALD evolution (blue), ALD evolution (green)																	
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu			
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr			



High Value Materials Characterization Solutions



X-RAY DIFFRACTION D6 PHASER - The Benchtop Platform

- Up to 1.2 kW with internal cooling + LYNXEYE XE-T detector + Motorized beam optics
- Reflection and transmission powder XRD + Non-ambient powder diffraction + GID, XRR, Stress, Texture
- Dynamic Beam Optimization + Touch panel operation + Stage and optics exchange



D8 ADVANCE Plus with Trio optics

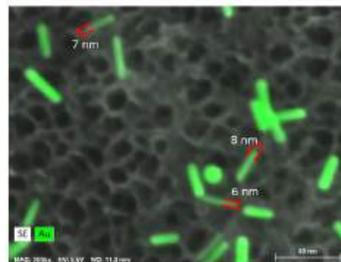
- Maximum flexibility meets unparalleled ease-of-use
- Samples ranging from polycrystalline coatings to epitaxial films benefit from a range of techniques to assess crystal quality, film thickness, compositions and reciprocal space mapping(RSM) by just push-bottom switch from software.



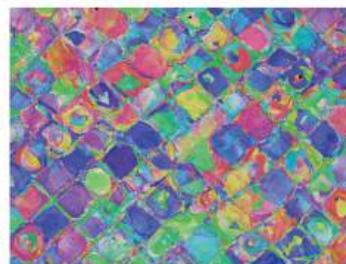
Electronic Microscopy Analyzers For SEM/TEM/STEM/FIB

- FlatQUAD EDS offers enhanced capabilities for analyzing beam-sensitive samples, non-conductive samples, and electron-transparent samples
- Micro-XRF on SEM enables the analysis of layer thickness and composition with micrometer-scale resolution.

Application case:



Titanium dioxide (TiO₂) nanotubes with gold (Au) nanorods, tested by QUANTAX FlatQUAD EDS



Additively Manufactured (AM) stainless steel
10 kV & 12 nA
Speed: 14,414 fps
tested by EBSD eWARP



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- Sub-10nm Photothermal AFM-IR imaging enables highest resolution characterization with monolayer sensitivity

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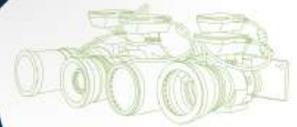
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Biomedical Optical System



叢集式 ALD 製程設備



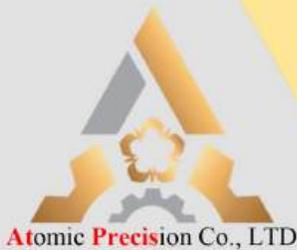
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航太級大口徑光學系統



<https://www.ncir.niar.org.tw/>



A-Atomic2

Atomic Layer Deposition System

原子層沉積系統 (A series)

平價學研設備，成膜品質同等於高階機種
 專為材料研究、元件結構與電性驗證而開發



◆ 設計理念

- 針對學術研究機構而開發，採用標準構件進行設計，料件取得簡單並導入時程短。
- 嚴守原子層沉積系統設計要點，不因價格而犧牲核心價值，協助使用者完成任務。
- 現行領導者設計要點，並依據實際回饋資訊與經驗，進行系統修正與演進。

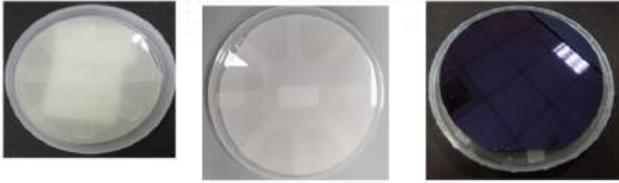
◆ 設計特點

- 模組化前驅物導入系統
易於維護、維修與擴充；最多6組前驅物，並可使用低蒸氣壓前驅物；徹底分流避免管路阻塞與粉塵問題
- 低洩漏率特化設計
可屏除低劑量汙染源影響製程結果
- 滿足現行多數材料製程需求
Oxide or nitride of Al, Si, Ti, Zr, Hf, etc.. Metal (TBD)
- 特殊電漿源設計 (Remote plasma)
可提升GPC 6% (相較於ICP)
- 特殊進氣設計改善均勻性 (U% < 2%)
針對死角殘留問題進行特化設計
- 單系統寬25公分內，可多系統整合
- 完整的技術支援服務
專業技術團隊含學研領域支援教練

		Aries series			Aries TB series	
		A2	A4	A6	TB20	TB64
Reactor Material		Quartz			Aluminum 6061T Alloy	
Substrate Size & Capacity		2" wafer*1	4" wafer*1	6" wafer*1	6" wafer*16	8" wafer*64
Temp.	Substrate Heater	Up to 300°C (Optional: 450°C)			Up to 200°C	
	Precursor	Up to 120°C (Optional: 200°C)				
	ALD Valve	Up to 120°C (Optional: 200°C)				
Plasma Source		PEALD/PEALE: HCD-type, P _{max} =300 W (Optional: ICP-type)			-	
Precursor Lines		ALD/PEALD: 2 independent lines, with ultra-fast ALD valve, Mass-Flow Controller & heating jacket (Optional: 4 lines)			4-6 lines	
Process Gases		2 lines with independent Mass-Flow Controller (Optional: 3-6 lines)				
System Controlling		Auto, PLC-based				
Exhaust System		Optional				

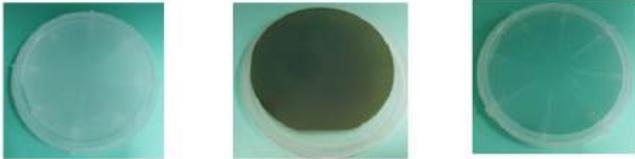


二維半導體材料(TMD)



MoS₂, WS₂ on various substrate,
Substrate: Sapphire, AlN or SiO₂/Si
wafer size: 2 inch, 4 inch.

單晶基板(substrate)



Sapphire N type 4H-SiC Semi-Insulating 4H-SiC

III-V wafer:

GaSb, InP, InSb, InSb, GaSb
Wafer size: 2inch, 4inch, 6inch.



III-V wafer

各種半導體磊晶(可客製化)



>AlN on Sapphire
>GaN on Sapphire
>4H-SiC on Sapphire
>4H-SiC on Si
>GaN HEMTs on Sapphire
>GaN HEMT on 4H-SiC
Wafer size: 4 inch, 6 inch.

各式實驗耗材



Quartz Boat



Quartz Tube



Graphite Boat

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- Data recording rate 4 kHz
- Triggered pulse sweep mode
- Pulse resolved monitoring
- Real-time pulse synchronized control

Applications:

- HIPIMS and pulsed plasmas
- Monitoring species fluctuations in pulse
- Resolving transient plasma behaviors
- Real-time control of substrate bias delay



真空鍍膜技術與實務應用訓練班

課程日期: 2025 年 11 月 17~18 日 課程地點: 國家實驗研究院-國家儀器科技研究中心



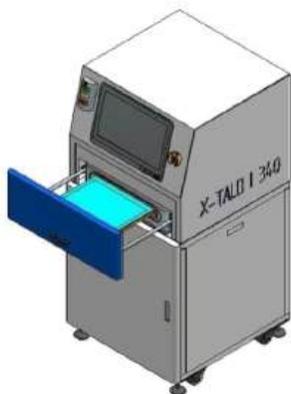
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電漿原理與半導體製程之應用	陳政營 / 國立臺灣海洋大學光電與材料科技學系 專任助理教授
PVD 製程與應用	廖博輝 / 國家實驗研究院-國家儀器科技研究中心 真空儀器與檢校技術組 研究員
CVD 製程與應用	陳維鈞 / 國家實驗研究院-國家儀器科技研究中心 智慧鍍膜設備發展組 組長
真空鍍膜實務操作	廖博輝、曾貴聖、王尉霖、丘坤安
分組報告、總結與檢討	蕭健男 / 國家實驗研究院-國家儀器科技研究中心 真空儀器與檢校技術組 研究員

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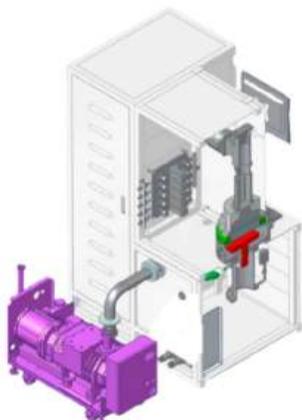
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大面積鈣鈦礦電池專用原子層沉積系統

- 界面平整: 可在FTO表面均勻覆蓋
- 定制工藝: NiOx / SnO₂ 薄膜專屬優化
- 高純致密: 薄膜致密度 ≥98%, 雜質含量 <1%
- 低溫窗口: 沉積溫度 ≤120 °C, 兼容鈣鈦礦敏感層
- 大面積: 300*400mm² 基板厚度不均勻性 ≤±3%



微波電漿增強原子層沉積系統

- 超快沉積: 氧化鋁單循環時間 13 s
- 低溫工藝: 沉積溫度 ≤250 °C
- 高效反應: 氧自由基密度提升 3 倍
- 大尺寸: 12 吋薄膜厚度不均勻性 ≤±2%
- 低損傷: 抑制離子轟擊, 無顆粒污染

獲取更多資訊

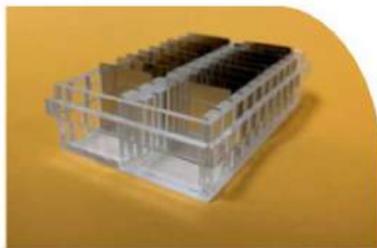
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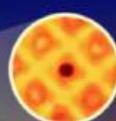
Micro-Spot

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- <1.5mm dia spot size
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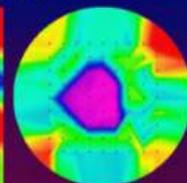
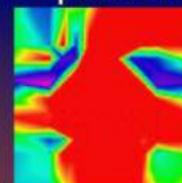
- Pattern structure
- Rough surface
- <3 um dia micro spot

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Black dots:

Actual measurement positions



- 電話 : 07-695-5325
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- 地址 : 821 高雄市路竹區路科五路82號4樓

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Welcome Message from President of TACT 2025

Since being established in September 3rd, 1999, the Taiwan Association for Coating and Thin Film Technology (TACT) has been growing into the most active society in the field of thin-film and coating technology in Taiwan. Continuing the previous nine successful international conferences that include Asia CVD 2004, TACT 2009, TACT 2011, TACT 2013, TACT 2015, TACT 2017, TACT 2019, TACT 2021 and TACT 2023, the forthcoming TACT 2025 will be held in Taipei on October 26-29, 2025. TACT 2025 is an important biennial event for knowledge exchange and offers an interactive platform of networking and collaboration for the community from academia and industry. It will cover a wide spectrum of research topics related to thin-film, coating and plasma technologies for sustainable energy, semiconductors, optoelectronics, flexible devices, and protective, tribological, organic, biological and functional coatings.

Selected papers will be published in the special issues of "Vacuum" (VAC) , "Surface and Coatings Technology" (SCT), and "High Entropy Alloys & Materials" (HEAMs).



More than 700 abstract submissions including invited and contributed papers as well as posters are expected to be presented, and around 800 researchers and engineers from more than 20 countries are expected to participate in the grand event. A group of internationally well-known scholars will be invited to deliver plenary, keynote and invited speeches in TACT 2025. It is our pleasure to announce the TACT 2025 International Thin Films Conference. We cordially invite you to attend the conference. Look forward to seeing you at TACT 2025 in Taiwan.



Sea-Fue Wang

President, Taiwan Association for Coating and Thin Film Technology
Chair Professor and President, National Taipei University of Technology, TAIWAN

TACT 2025 Directions and Maps

Conference Venue

GIS TAIPEI TECH Convention Center

<https://www.meeting.com.tw/en/ntut/index.php>

+886-2-2741-7655 ext. 201

2~3F, 1, Ln. 193, Sec. 3, Zhong-Xiao E. Rd.

(Building Everlight)

Da'an Dist., Taipei 106,

TAIWAN, R.O.C.

集思北科大會議中心，國立臺北科技大學 億光大樓 2F~3F



Located strategically at the heart of the bustling Taipei City, GIS Taipei Tech Convention Center is easily accessible from MRT Zhongxiao Fuxing Station, MRT Zhongxiao Xinsheng Station and Jianguo Elevated Road. The venue is equipped with ample parking lots to accommodate large capacity events.

Characterized by the usage of natural lighting and minimalistic-cum-high-tech interior design, the venue offers various multiple-purpose meeting rooms that can be flexibly set-up to meet your event needs. GIS Taipei Tech Convention Center comprises of 2 stairway meeting rooms and a stairway meeting hall which can host 60 and 100 delegates respectively. The venue also has plenty of networking spaces for the connection of harmonious minds. GIS Taipei Tech Convention Center coupled with professional event consulting services and an expert event execution team, we promise to deliver a mesmerizing and human-centric event experience like none other, redefining your meeting experience.

Directions

1. 臺灣桃園國際機場至國立臺北科技大學之交通資訊

From Taoyuan International Airport (TPE) to National Taipei University of Technology (Taipei Tech)



1. 入境後，找尋"機場捷運"指示

After arrival, search for the sign "Airport MRT"

2. 搭乘機場捷運至台北車站

Take Airport MRT to Taipei Main Station

3. 轉乘台北捷運藍線至忠孝新生站

Transfer to the Taipei Metro Blue Line and get off at Zhongxiao Xinsheng Station

4. 國立臺北科技大學在四號出口外

National Taipei University of Technology is right outside Exit 4

2. 學校周邊交通資訊

Public transportation around Taipei Tech



(1) 捷運 Taipei Metro (MRT) :

- 藍線及橘線「忠孝新生站」，4號出口
Zhongxiao Xinsheng Station (Blue & Orange Line), Exit 4
- 臺北捷運路線圖 Taipei Metro Route Map

<https://english.metro.taipei/cp.aspx?n=1BE0AF76C79F9A38>

Taipei Metro (MRT) Route Map





(2) 公車 Bus :

- 臺北科技大學站 National Taipei University of Technology Stop
212、232、262、299、605
- 忠孝新生路口 Zhongxiao Xinsheng Rd. Intersection Stop
72、109、115、214、222、226、280、290、505、642、665、668、672



(3) 公共自行車 YouBike :

- 捷運忠孝新生站 3 號出口旁
Next to MRT Zhongxiao Xinsheng Station, Exit 3

(4) 臺北大眾交通價位 Fare of public transportation in Taipei

交通工具 Transportation	價位 Fare
MRT	*Starting from NT\$20 (one way) Fare varies according to your destination
Bus	*NT\$15 (per ride) Fare varies according to your destination
YouBike	**NT\$10 per 30 minutes within the first 4 hours.
Taxi	Starting from NT\$85 Fare varies according to your destination

* A 20% off the regular fare is given to Student EasyCard holders. Extra 20% discount will be given when transferring between Bus and MRT.

** NT\$5 is granted to YouBike members for the first 30 minutes.

3. 前往 TACT 2025 會議場 – 集思北科大會議中心

Direction to venue of TACT 2025: GIS Taipei Tech Convention Center
(<https://goo.gl/maps/4RK1Bg9mVLB2>)

由忠孝-新生捷運站四號出口走出之後，迴轉沿忠孝東路三段紅磚道向東直行，經過北科大校門、建國北路高架橋馬路之後，左方之灰色建築物二樓與三樓即為 TACT 2025 會場，步行距離約五百公尺。
Walk from Zhongxiao-Xingsheng metro station exit 4 along Zhongxiao E. Rd. toward east (take a U-turn at the exit). After passing the gate of Taipei Tech and Jianguo elevated expressway, the GIS Taipei Tech Convention Center is on the left. The venue of TACT-2025 is at the 2nd ~ 3rd floor of the Everlight Building (grey in color). The walking distance is about 500 meter.

4. 更多交通資訊

More transportation information

臺北捷運 MRT: <https://english.metro.taipei/>

公車 Bus: <https://ebus.gov.taipei/>

火車 Taiwan Railways: https://tip.railway.gov.tw/tra-tip-web/tip/?lang=EN_US

高鐵 Taiwan High Speed Rail: <https://en.thsrc.com.tw/>

桃園機場捷運 Taoyuan Airport MRT: [https://www.taoyuan-airport.com/Airport MRT?lang=e](https://www.taoyuan-airport.com/Airport_MRT?lang=e)

臺北公共自行車 YouBike: <https://en.youbike.com.tw/region/main/>

Poster Session Venue

Time: 17:00~18:30, Monday, Oct. 27, 2025

Student Activity Center, National Taipei University of Technology

國立臺北科技大學 學生活動中心



TACT 2025 Campus Map



Main Entrance / Side Entrance

- 1. Dept. of Electro-Optical Engineering
- 2. Sun Yat-Sen Memorial hall (Environmental Engineering)
- 3. Dept. of Civil Engineering
- 4. Dept. of Materials and Mineral Resources Engineering
- 5. Design Building
- 6. Hong-Yue technology Research Building
- 7. Sixth Academic Building
- 8. First Academic Building
- 9. Fourth Academic Building
- 10. Biotechnology Building Biotech
- 11. Dept. of Chemical Engineering
- 12. Second Academic Building
- 13. Third Academic Building
- 14. General Studies Building
- 15. Dept. of Molecular Science and Engineering Building
- 16. Chemistry Building

- 17. Library
- 18. Administration Building
- 19. Student Activity Center (Poster Session)
(海報展示區：學生活動中心)
- 20. Integrated Technology Complex
- 21. Alumnus Association
- 22. Red House (Historic Monument)
- 23. Corridor
- 24. Innovation and Exhibition Center
- 25. Cooperative Education Building
- 26. Dormitory
- 27. Tennis Court
- 28. Basketball Court
- 29. Track & Field
- 30. Everlight Building(億光大樓)
(GIS Taipei Tech Convention Center)
集思北科大會議中心

TACT 2025 Banquet

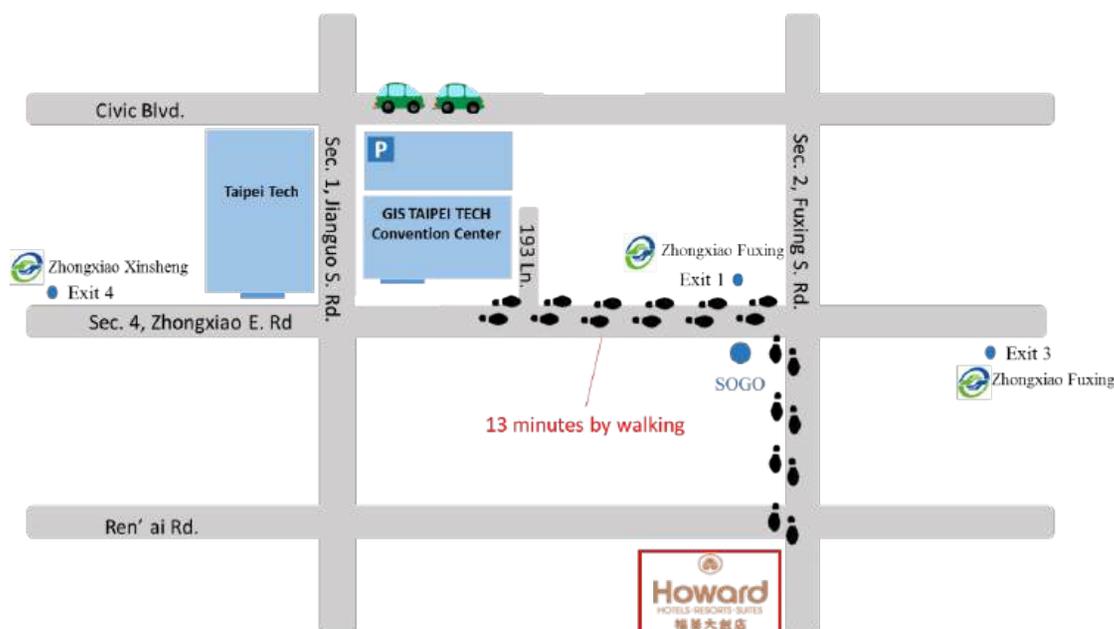
Time: 6:00 – 8:30 pm, Tuesday, October 28, 2025

Banquet Hall, B2F, THE HOWARD PLAZA HOTEL TAIPEI

(#160, Sec. 3, Ren-Ai Rd., Taipei)

台北福華大飯店 B2/福華廳 (台北市大安區仁愛路三段 160 號)

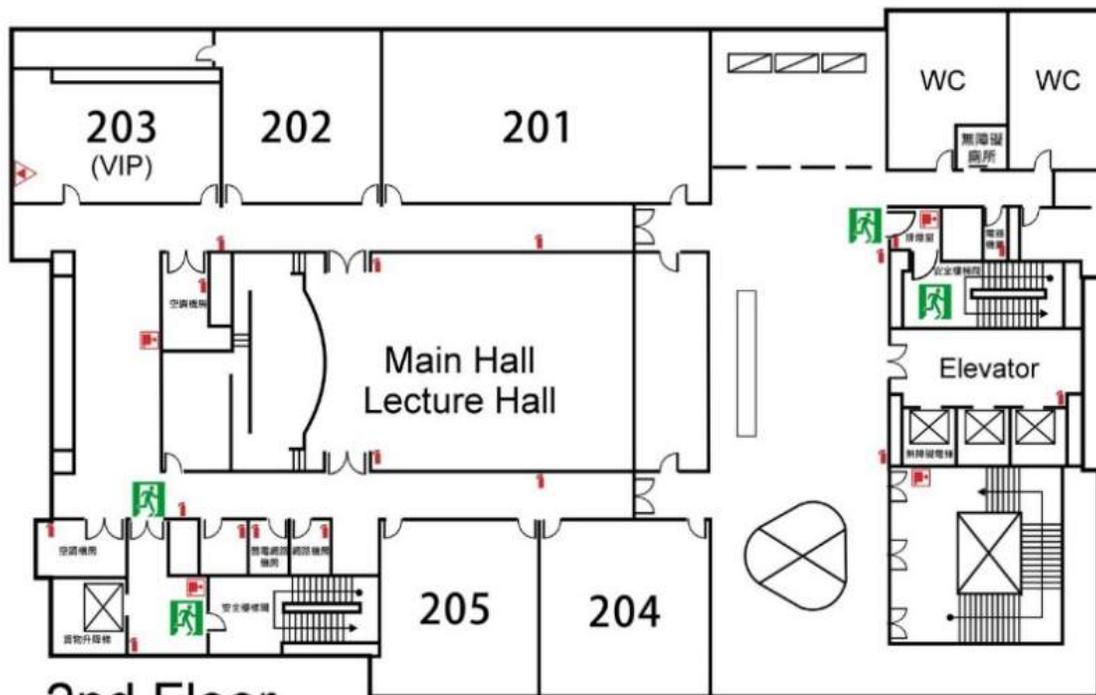
<http://www.howard-hotels.com.tw/en/>



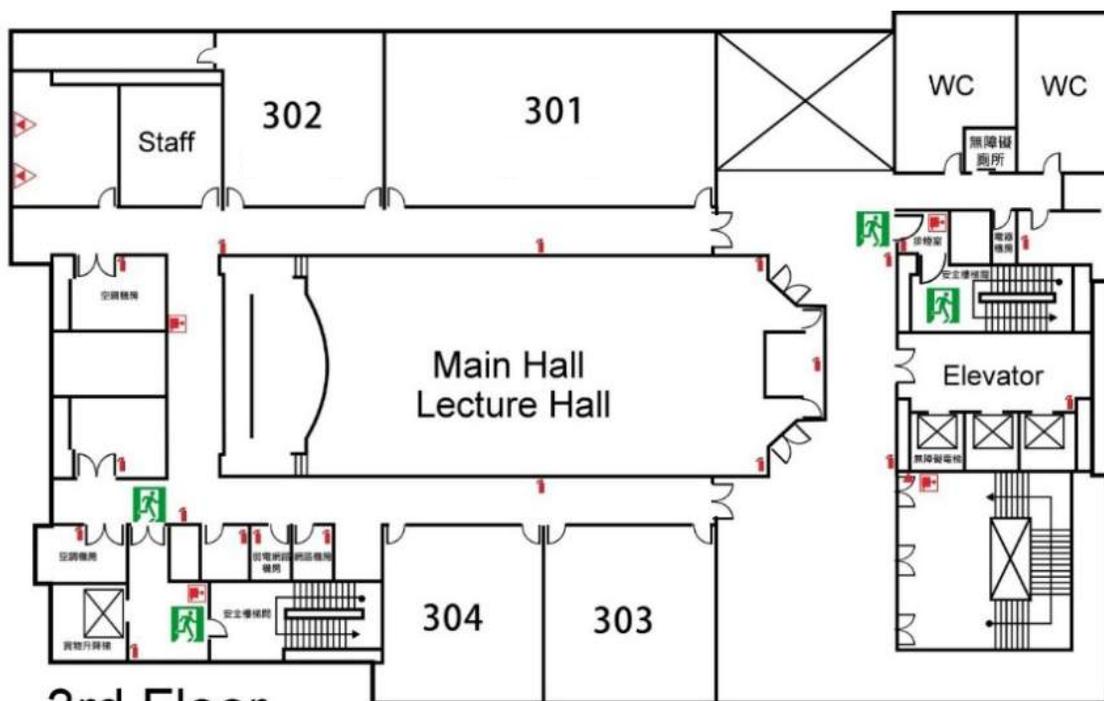
Traffic:

1. This conference will provide shuttle service to the banquet venue (THE HOWARD PLAZA HOTEL)
2. Walking is recommended, and it only takes 13 mins walking from the GIS TAIPEI TECH Convention center.
3. It takes 15 mins by the taxi. It will even take longer during the rush hour.

TACT 2025 Conference Rooms



2nd Floor



3rd Floor

TACT 2025 Exhibitors and Sponsors

Sponsors			
1.	日商理學	Rigaku https://rigaku.com/	
2.	台灣格雷蒙·偉斯企業	Gredmann http://www.gredmann.com/	
3.	益弘儀器股份有限公司	E HONG Instruments Co., Ltd. https://www.ehong.com.tw	
4.	雅森科技股份有限公司	ASHERN https://www.ashern.com.tw	
5.	工業技術研究院 材料與化工研究所 材料世界網	ITRI MCL https://www.materialsnet.com.tw/	
6.	卡爾蔡司股份有限公司	ZEISS https://www.zeiss.com/microscopy/en/home.html	
7.	光磊企業有限公司	MDA Instruments Co., Ltd http://www.mdatek.com.tw /	
8.	Bruker	Bruker https://www.bruker.com/en.html	
9.	SK trichem	SK trichem https://www.sk-materials.com/new/eng/html/main/	

10.	原子精製股份有限公司	Atomic Precision Co., Ltd. https://www.atprecis.com/at-precis	 原子精製股份有限公司 Atomic Precision Co.,LTD
11.	國家實驗研究院 國家儀器科技研究中心	National Center for Instrumentation Research https://www.ncir.niar.org.tw/	  國家實驗研究院 國家儀器科技研究中心
12.	瑞礮科技股份有限公司	RayNext https://www.raynext.com.tw/index	
13.	PLASUS GmbH	PLASUS GmbH https://www.plasus.de	
14.	台灣真空學會	Taiwan Vacuum Society https://www.taiwanvacuum.org/	
15.	鉍鐳鎢科技股份有限公司	E-Plasma Tech Co., Ltd.	
16.	柔性雲母電子產學聯盟	MICAtronics Foundry https://sites.google.com/view/mica-platform	 MICAtronics Foundry
17.	佳凌科技	CALIN https://www.calin.com.tw/tw	 佳凌科技股份有限公司 CALIN TECHNOLOGY CO.,LTD.
18.	立創光電	LiveStrong Optoelectronics Co.,Ltd. http://www.litron.com.tw	 立創光電

TACT 2025 Acknowledgments

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- Taiwan Vacuum Society (TVS)
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Assistant

Miss Yi-Wen SHIH

tact.secretary@gmail.com

TACT 2025 Plenary and Keynote Session

Plenary Session I

Discovery of Goldene Comprising Single-atom Layer Gold: Prospects for Novel Noble Metalenes

Lars G. Hultman

Department of Physics, Chemistry and Biology (IFM)
Linköping University, SWEDEN

ABSTRACT

The transition to a zero-carbon energy system requires green hydrogen that is affordable, durable, and scalable. Yet commercialization remains hampered by high production costs, limited long-term electrocatalyst stability under industrial current densities, and the challenge of translating laboratory breakthroughs into integrated systems. Our work tackles these bottlenecks through membrane-electrode-assembly (MEA)-based green hydrogen production and energy-saving hydrogen generation from waste-to-value conversion. We first present advanced, earth-abundant electrocatalysts and engineered MEAs that achieve outstanding oxygen and hydrogen evolution kinetics and long-term durability, enabling cost-effective water electrolysis from single cells to stacked modules. We then extend this MEA platform to electro-reforming of waste plastics (e.g., PET) into formate and hydrogen, where anodic oxidation of ethylene glycol lowers the cell voltage compared with conventional oxygen evolution, dramatically reducing electricity consumption. By coupling high-performance catalysts with scalable MEA architecture, this dual strategy provides a comprehensive pathway—from sustainable materials and device engineering to circular-economy chemical valorization—demonstrating how green hydrogen production can advance from laboratory concept to industrial reality while simultaneously valorizing waste streams.

Keywords: Electrocatalyst; AEMWE; OER; EGOR; HER; waste-to-value conversion; Green hydrogen

REFERENCES

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- [2] MAX phases are inherently nanolaminated hexagonal ternary metal carbides and/or nitrides with a general formula $M_{n+1}AX_n$, where M is a transition metal, A is a group 13-16 element, X is carbon and/or nitrogen, and $n = 1, 2, 3, \dots$ Review: M. Dahlgqvist, M.W. Barsoum, J. Rosen, *Materials Today* 72 (2024) Jan/Feb, p. 1 <https://doi.org/10.1016/j.mattod.2023.11.010>
- [3] H. Fashandi, M. Dahlgqvist, J. Lu, J. Palisaitis, S. Simak, I. Abrikosov, J. Rosen, L. Hultman, M. Andersson, A. Lloyd-Spetz, P. Eklund, *Nature Materials* 16 (2017) 814

- [4] Potassium ferricyanide is combined with potassium hydroxide (or sodium hydroxide) and water to formulate Murakami's etchant. This etchant is used by metallographers to provide contrast between binder and carbide phases in cemented carbides.
- [5] Y. Shi, [...], L. Hultman, *Sci. Advances* 11, eadt7999 (2025) 28 March 2025
- [6] S. Kashiwaya, Y. Shi, J. Rosen, L. Hultman, *2D Materials* 12 (2025) 033001

Prof. Lars Hultman

Scientific Publications:	940 in total (Web of Science) out of which 30+ are with Taiwanese co-authors
# Citations	63000 independent
Hirsch-index	105



Born 13 April, 1960

Academic Degrees

- 1991 Docent in Materials Physics, Linköping University, Sweden
- 1988 Ph.D. in Materials Physics, Linköping University
- 1984 M.Sc. Applied Physics and Electrical Engineering, Linköping University

Current and Previous Academic Positions

- 1999 - Professor, Linköping University, Head Thin Film Physics Division, IFM
- 2013 - CEO, Swedish Foundation for Strategic Research (SSF) with time for research
- 2024 - Visiting Chair Professor at Ming Chi University of Science and Technology, New Taipei City
- 2004-2006 Visiting Professor at University of Illinois, Urbana
- 1989-1990 Post-doc at Northwestern University, Illinois (Swedish Natural Science Council Grant)

Major Distinctions and Awards

- 2024 Discovered **Goldene**: single-atom layer gold. *Nature Synthesis* doi.org/10.1038/s44160-024-00518-4
- 2023 AVS John A. Thornton Memorial Award and Lecture
- 2023 R.F. Bunshah Award and Honorary ICMCTF Lecture
- 2021 - Court Chamberlain to His Majesty the King Carl XVI Gustaf of Sweden
- 2009 - Member Royal Swedish Academy of Sciences (KVA)
- 2008 - Member of the Royal Swedish Academy of Engineering Sciences (IVA)
- 2018 Certificate in Professional Board Work from Michaël Berglund AB
- 2013 AkzoNobel Sweden Science Award
- 2012 American Ceramic Society Ross Coffin Purdy Best Paper Award: ACS Nano 6, p 1322
- 2012 LiU Junior Faculty Prize for *most prominent researcher supporting careers of junior researchers*
- 2010&2000 The Jacob Wallenberg Scholarship in Material Science
- 2006&2007 Fellow of AVS (American Vacuum Society) & Forschungszentrum Dresden-Rossendorf
- 2003 Excellent Researcher Recognition by the Swedish Research Council (VR)
- 1993 Swedish Government award for most prominent young researcher

National and International Assignments of Importance

- 2023 Invited by Taipei Mission in Sweden Ambassador Dr. Klement Ruey-sheng GU to 112th ROC Ntnl Day
- 2022 - Chair Advisory Comm. Wallenberg Initiative on Materials Science for Sustainability (WISE)
- 2019 - Board Member Sweden- Japan Foundation
- 2016 Participant IVA Royal Technology Mission to Japan; Headed by HM King Carl XVI Gustaf
- 2014-2024 Board Member *Vetenskap & Allmänhet* (Science & Society)
- 2010-2012 Board of Directors, American Vacuum Society (AVS), NY

2009-2012 Scientific Advisory Board, Hungarian Academy of Sciences
 2007-2012 Board Member Linköping University; 2 consecutive periods
 2007-2009 Chair, AVS Executive Comm Advanced Surface Engineering Division
 2003-2014 Founder and Chair, Center for Nano Science & Technol. (CENANO) at Linköping Univ.
 2003-2004 General Chair & Prgrm Chair Int Conf Thin Films & Metal. Coatings, San Diego, 700+ papers
 2001-2007 Chancellor of Sweden to IUVSTA (vice-chancellor 1998-2001)
 1998-2004 Board Member, Center Industrial ICT (CENIIT) at LiU
 1994-2004 Board member of the Scandinavian Society for electron microscopy
 1996-1988 Founding member & Secretary of the Swedish Assoc. for Surface Engineering
 1996-2008 President ('97-'98) and Board Member of the Swedish Vacuum Society

Editorial Board Memberships

1994 - ongoing. Editor-in-Chief VACUUM (Elsevier Ltd); Journal Impact Factor = 4

Keynote Invited Talk at International Events: 118 Invited/plenaries including several occasions in Taiwan

Major Grants as Prime investigator (1 SEK ≈ 3 TWD)

2023 - KAW Foundation WISE Sustainable Development Post Doc Grant	MSEK 4
2010 - Founder & Dir. (until 2013): Governm. Strategic Res. Area (SFO) Mat. Sci., <i>AFM</i>	MSEK 28/yr
2011-2023 Wallenberg Scholar	MSEK 3/yr
1990-2021 VR-Individual Project Grants:	MSEK 1/yr
2012-2017 Director and Founder: SSF Synergy Grant in Materials Science <i>FUNCASE</i>	MSEK 26
2008-2013 ERC Advanced Grant	MSEK 23
2007-2013 Director and Founder: VINNOVA Excellence Center <i>FunMat</i>	MSEK 63
2006-2016 Director and Founder: VR Linnaeus Grant <i>LiLI-NFM</i>	MSEK 80
2006-2012 Director and Founder: SSF SRC <i>MS²E</i>	MSEK 45
1997-2006 Director/Founder: SSF- <i>Thin-Film Growth</i> & SSF- <i>Film Synthesis Consortium</i>	MSEK 51
2000-2005 EU-Proj FullereneLike Mtrl; <i>Canadis-FlatPanelDisplay</i> ; <i>Ultraplate-Electrodep</i>	MSEK 1.5/yr
2002; 2008-2012 KAW Analytical TEM + FEI-Titan3 60-300 kV electron microscopes.	MSEK 15+46

Supervision (including career boost to several Taiwanese scholars)

Graduated MSc students	20	Current PhD students	2 (co-supervised)
Graduates Licentiate students	42	Previous post-docs	22
Graduated PhD students	42	Current post-docs	3

2011 - Founder of the Graduate School *Agora Materiae* at Linköping University (LiU)

2010-2024 *Inspector* for the LinTek Student Union at Linköping University

1997-2001 Creator & Program Responsible *M.Sc.. Electronics Design Prgrm*, LiU-Campus Norrköping

1994-2013 Lecturer/Examiner Physical Metallurgy (*Materials Science*)

Entrepreneurial Achievements

2018 - Consulting for SweGaN AB (www.swegan.se); Taiwanese CEO, Founder & Board Member: Jr-Tai Chen

2013 - Member of IVA Business Executives Council (Näringslivsrådet)

2018 - Initiator and Comm. Member for *IVA Barometer for Swedish Business' Investments in R&D*

2009 - Neutron thin film detector solutions for ESS (own company *nWorks*, patents & job-coat factory)

2008 - 2010 Board member, Carbodeon Ltd Oy

20+ patents in nanotech. Exchange with industry and spin-outs (*Impact Coatings & Thin Film Electronics*)

Contributions towards International Research Exchange and Building Research Environments & Infrastructure

2022 - Installed SSF Expat Grants MSEK 63 for Ukrainian Scientists' professional refuge at university in

Sweden

2020 - Installed SSF-Israel/MOST) Lise Meitner Bilateral Research Program (25+25 MSEK)

2019 - Installed SSF-Sweden/Taiwan MOST/NSTC Collab. Research Framework Projects (MSEK 60 from SSF)

2013 - Installed SSF Grad. School *SwedNESS* with post-docs program for neutron scattering

2013 - Interactions SSF-JSPS for nominations of Post-Doc Fellows to Japan

2021 - Proposed to VR-RFI a Swedish National Network on Atomic Resolution TEM (ARTEMI) – Granted.

1988 - Built world-leading research environment at LiU (exp./theory/simul., industry & internat. Exchange)

2010-2014 Board of Directors, MAX-IV Synchrotron Lab. & Ref. Group NanoMAX Beamline, Lund, Sweden.

Plenary Session II

Powering a Greener Future: MEA-based Green Hydrogen Production and Energy-Saving Hydrogen Production via Waste-to-Value Conversion

Jyh-Ming Ting

Department of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan

ABSTRACT

The transition to a zero-carbon energy system requires green hydrogen that is affordable, durable, and scalable. Yet commercialization remains hampered by high production costs, limited long-term electrocatalyst stability under industrial current densities, and the challenge of translating laboratory breakthroughs into integrated systems. Our work tackles these bottlenecks through membrane-electrode-assembly (MEA)-based green hydrogen production and energy-saving hydrogen generation from waste-to-value conversion. We first present advanced, earth-abundant electrocatalysts and engineered MEAs that achieve outstanding oxygen and hydrogen evolution kinetics and long-term durability, enabling cost-effective water electrolysis from single cells to stacked modules. We then extend this MEA platform to electro-reforming of waste plastics (e.g., PET) into formate and hydrogen, where anodic oxidation of ethylene glycol lowers the cell voltage compared with conventional oxygen evolution, dramatically reducing electricity consumption. By coupling high-performance catalysts with scalable MEA architecture, this dual strategy provides a comprehensive pathway—from sustainable materials and device engineering to circular-economy chemical valorization—demonstrating how green hydrogen production can advance from laboratory concept to industrial reality while simultaneously valorizing waste streams.

Keywords: Electrocatalyst; AEMWE; OER; EGOR; HER; waste-to-value conversion; Green hydrogen

Prof. Jyh-Ming Ting

Prof. Jyh-Ming Ting is an Advanced Semiconductor Engineering Inc Chair Professor at the Department of Materials Science and Engineering, National Cheng Kung University (NCKU) in Taiwan. Prof. Ting has a BS degree in Nuclear Engineering from National Tsing Hua University, Taiwan, and MS and PhD degrees at the Department of Materials Science and Engineering, University of Cincinnati. After Prof. Ting received the PhD degree, he joined Applied Sciences, Inc. (ASI), Ohio, USA as a Scientist and then R&D Director. After 8-year working at ASI, Prof. Ting accepted a faculty position in NCKU. Prof. Ting's expertise includes thermally hyper-conductivity carbon-based materials, and multi-metal and high-entropy thin films and coatings for various functional applications, especially those involving catalysis. His most recent research effort is dedicated to seawater electrolysis for the production of green hydrogen. Prof. Ting has received a number of awards, authored over 230 refereed journal articles, and holds more than 36 patents.



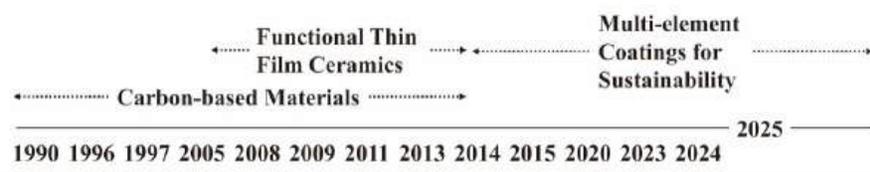
Professional Experience

- 1997 to present - Professor, Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
- 2016 to 2021 - Vice Dean, College of Engineering, National Cheng Kung University, Tainan, Taiwan
- 2016 to 2017 - President, Taiwan Association for Coating and Thin Film Technology
- 2012 to 2015 - Chair, Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
- 2001 to 2006 - Division Director, Research Headquarter, National Cheng Kung University, Tainan, Taiwan
- 1994 to 1997 - R&D Director, Applied Sciences, Inc., Ohio, USA
- 1992 to 1993 - Senior Research Scientist, Applied Sciences, Inc., Ohio, USA
- 1990 to 1991 - Research Scientist, Applied Sciences, Inc., Ohio, USA

Honor and Award

- 2023 - Outstanding Research Award, National Science and Technology Council, Taiwan
- 2020 - Fellow, Material Research Society, Taiwan
- 2015 - ASE Chair Professor, Taiwan
- 2015 - Outstanding Contribution Award, Taiwan Association for Coating and Thin Film Technology
- 2014 - Outstanding Research Award, National Science and Technology Council, Taiwan
- 2013 - Outstanding Technology Transfer Contribution Award, National Science and Technology Council, Taiwan
- 2011 - Outstanding Engineering Professor Award, The Chinese Institute of Engineers, Taiwan
- 2008 - KT Li Technology Gold Medal Award, The KT Li Foundation for the Development of Science and Technology, Taiwan
- 2005 - Outstanding Technology Transfer Award, National Science Council, Taiwan
- 1996 - R&D100 Award, USA

Research



- Carbon-based Materials research focused on the research and development of vapor-grown carbon (nano) fiber for thermally hyper-conductive composites. The resulting patents have been licensed to a number of companies in Taiwan.
- The research on Functional Thin Film Ceramics was primarily related to the development of various semiconducting oxides, such as aligned TiO₂ nanorods, prepared using sputter deposition.
- Continued from the subject of Functional Thin Film Ceramics, research and development of novel multi-element coatings as catalysts is addressed. Various electrochemical applications are targeted, focusing on Sustainability. Examples include water electrolysis, waste treatment, electrochemical advanced oxidation processing, and electrochemical reforming. Currently, seawater electrolysis using anion exchange membrane water electrolyzer is highlighted.

Keynote Session I

Materials science-based guidelines to develop robust hard coatings

Paul Heinz Mayrhofer

**Institute of Materials Science and Technology, Technische Universität Wien,
TU Wien, Vienna, AUSTRIA**

e-mail: paul.mayrhofer@tuwien.ac.at

ABSTRACT

Hard coatings for advanced tooling and high-performance components must withstand increasingly demanding environments, where high mechanical loads are often combined with extreme thermal and oxidative stress. While nitrides are the preferred base material for mechanically dominated applications due to their high hardness and strength, oxide-based systems excel in resisting high-temperature corrosion. Therefore, optimizing nitride-based coatings for both mechanical performance and thermal stability—including oxidation resistance—is of critical importance. This review highlights recent advances in the development of such multifunctional nitride coatings, with a particular focus on the $\text{Ti}_{1-x}\text{Al}_x\text{N}$ system as a model material.

$\text{Ti}_{1-x}\text{Al}_x\text{N}$ coatings, widely applied in the cutting and forming industries, offer the unique advantage of enabling all four classical strengthening mechanisms—strain hardening, solid solution strengthening, fine grain strengthening, and particle strengthening—within a single-phase, face-centered cubic (fcc) solid solution. These supersaturated solid solutions, achievable only via vapor-phase deposition, possess exceptionally high point and dislocation defect densities and nanocrystalline grain structures, which are further tunable through alloying with elements such as Si or B.

Upon thermal exposure, these metastable solid solutions undergo spinodal decomposition into coherent fcc-TiN and fcc-AlN domains, which act as strong barriers to dislocation motion and result in age hardening. However, continued temperature increase triggers a martensitic-like transformation of fcc-AlN into its stable hexagonal phase (hcp-AlN), associated with a 26% volume expansion that can degrade the coating through cracking or spallation.

To overcome these thermally induced instabilities, strategic alloying—especially with tantalum—has emerged as a powerful approach. Ta addition enhances cohesive energy, retards the deleterious fcc-to-hcp transformation of AlN, and improves both mechanical and thermomechanical properties. For example, $\text{Ti}_{0.42}\text{Al}_{0.48}\text{Ta}_{0.10}\text{N}$ retains a hardness of 42.0 ± 2.4 GPa even after annealing at 1100 °C. Alloying also increases fracture toughness, as demonstrated by a Ta-containing $\text{Ti}_{0.44}\text{Al}_{0.41}\text{Ta}_{0.15}\text{N}$ coating, which achieves a K_{Ic} of 4.7 ± 0.2 $\text{MPa}\sqrt{\text{m}}$ —significantly above that of its Ta-free counterpart.

In terms of oxidation resistance, Ta-alloyed coatings outperform their base alloys due to the formation of dense, protective oxide layers. Additional improvements are achieved through alloying with Si or rare earth elements like Ce and La. Coatings such as $\text{Ti}_{0.5}\text{Al}_{0.5}\text{N}(\text{CeSi}_2)_{0.02}$ demonstrate excellent high-temperature stability, retaining a hardness of 31.9 ± 2.2 GPa after annealing at 1200°C and showing minimal oxidation after prolonged exposure to ambient air at 950°C .

Beyond compositional design, microstructural concepts such as multilayers, superlattices, and nanocomposites introduce new dimensions for performance optimization. Superlattices with alternating (Ti,Al)N-based layers, especially those alloyed with Ta, Mo, or W, benefit from coherency stresses, modulus mismatches, and epitaxial stabilization. These structures exhibit enhanced dislocation activity at interfaces and controlled phase transformations under load, enabling simultaneous increases in hardness and toughness. For instance, TiN/WN superlattices achieve hardness and fracture toughness values of 36.7 ± 0.8 GPa and 4.6 ± 0.2 $\text{MPa}\sqrt{\text{m}}$, respectively.

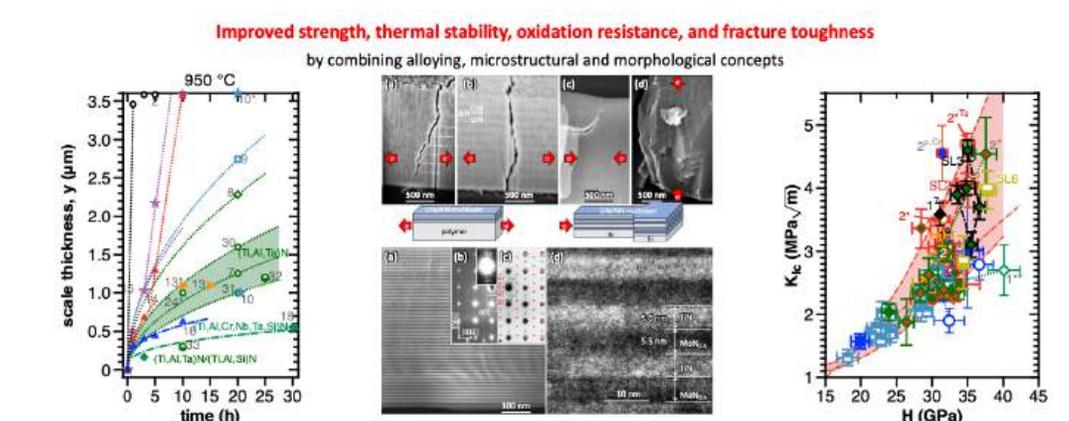


Fig. 1: Some key results of representative studies

Taken together, this review demonstrates that through a combined strategy of alloying, nanoscale structural engineering, and thermal activation phenomena such as spinodal decomposition, the mechanical strength, fracture toughness, and oxidation resistance of $\text{Ti}_{1-x}\text{Al}_x\text{N}$ coatings can be simultaneously enhanced. These principles are broadly applicable and provide a framework for the rational design of next-generation nitride, carbide, and boride coatings meet the ever-growing performance demands in extreme industrial environments. The continued integration of experimental insights and theoretical modeling will be vital for driving further advances in high-performance coating technologies. Morphological concepts—ranging from nanolamellar architectures and grain size refinement to spinodally decomposed nanodomains and interface-engineered multilayers—offer additional degrees of freedom for tailoring hard coatings. When combined with targeted alloying, they enable the simultaneous optimization of strength, toughness, and oxidation resistance.

REFERENCES

P.H. Mayrhofer, H. Clemens, F.D. Fischer, Materials science-based guidelines to develop robust hard thin film materials, *Prog. Mater. Sci.* 146 (2024) 101323 1–57 doi.org/10.1016/j.pmatsci.2024.101323

Prof. Paul H. Mayrhofer

Institute of Materials Science and Technology,
TU Wien, 1060 Vienna, Austria,
paul.mayrhofer@tuwien.ac.at



Paul Mayrhofer is a University Professor of Materials Science at the Institute of Materials Science and Technology, TU Wien, Vienna, where he chairs the Materials Science Division since 2012. He earned his Ph.D. (2001) and Habilitation (2005) in Materials Science from the University of Leoben. His postdoctoral work and Erwin-Schrödinger Fellowship took him to the University of Illinois, RWTH Aachen, and Linköping University.

Paul pioneered age hardening in hard ceramic thin films based on ternary nitrides and borides and has a profound interest in phase transitions. His research combines computational and experimental methods to develop and characterize vapor-phase deposited nanostructured protective and functional materials.

He has received numerous prestigious awards, including the START Prize (2007), the establishment of a Christian Doppler Laboratory (2011), appointment as a Fellow of the American Vacuum Society (AVS, 2018), the Bill Sproul Award and Honorary Lecture (AVS, 2023), and the Dr.-Wolfgang-Houska-Preis (2024). He is also an elected member of the Austrian Academy of Sciences and has served in various leadership roles, such as Chair of the Advanced Surface Engineering Division (ASED) of AVS, President of the Austrian Vacuum Society, and on the boards of the Austrian Science Fund and the Theodor Körner Fonds.

Paul has authored over 340 SCI-listed publications (with over 18,900 citations to these, h-index of 74 (GS)) including five invited papers and two book chapters. Since 2020 alone, he has published 140 SCI papers. He has delivered over 130 oral presentations at leading international conferences, including 75 invited talks, of which 22 were keynote or plenary lectures. He is a co-applicant on 13 patents related to hard coatings and has supervised 35 Ph.D. and 70 Master's students to their degrees, in addition to hosting 24 Postdoctoral researchers. His mentorship has led to significant recognition for his students, with 25 of them receiving prestigious awards at international conferences, such as the ICMCTF Student Awards and the Acta Materialia Student Award.

Honor and Awards

- 2024 **“Dr.-Wolfgang-Houska-Preis“** (3rd place) for the project *Written in Stone – Data of Mankind for Eternity* Institute of Materials Science and Technology, B & C Privatstiftung (A)
- 2023 **“Bill Sproul Award and Honorary Lecture”** For seminal contributions to materials science-based guidelines for improved thermal stability, strength, and toughness of nitride and boride-based thin films, American Vacuum Society
- 2022– **“Austrian Academy of Sciences (ÖAW)”**, corresponding member in the mathematics-natural sciences class
- 2018 **“FWF Wittgenstein Award”** nominee, TU Wien (A)
- 2018 **“Fellow of AVS”** For seminal contributions in the development of vapor phase deposited nanostructured materials and self-hardened protective coatings of ternary nitrides and borides, American Vacuum Society.
- 2017 & 2019 **“Best Lecture Award”** of TU Wien, for Materials Science of Metallic Materials
- 2013 **“Young Academy”** of the Austrian Academy of Sciences (ÖAW)
- 2009–2019 **Guest Professor** at the Central South University, Changsha, Hunan (China)
- 2011 **“EU-40 Materials Prize”** finalist, European Research Materials Society (E-MRS)
- 2009 **“Josef Krainer Würdigungspreis 2009”** for *Progress in materials science*; the

- prizewinners are selected by an interdisciplinary "Josef Krainer Gedenkwerk"-Jury after peer review (A)
- 2007 "FWF START Award" for the project *Atomistic study of metastable phases*; the prize-winners are selected by an esteemed international START/Wittgenstein-Jury after very stringent peer review, FWF the Austrian Science Fund (A)
- 2006 "Theodor Körner Preis" for *Atomistic relations in metastable hard coatings*, Theodor Körner Fonds zur Förderung von Wissenschaft und Kunst, Wien (A)
- 2003 "Josef Krainer Förderungspreis 2003" for *Research activities in the field of physical metallurgy and materials testing*; Josef Krainer-Steirisches Gedenkwerk, Styria (A)
- 2001 "Young Scientist Award" in recognition of best paper presented at the E-MRS 2001 Spring Meeting, Strasbourg (F)

Publication List

* Journal Papers (2020.02~2025.02) 108



Paul Mayrhofer
University Professor of Materials Science, TU Wien, AVS Fellow
Bestätigte E-Mail-Adresse bei tuwien.ac.at - [Startseite](#)

Materials Science · Thin Film Materials Science · Advanced Surface Enginee... · Science of Hard

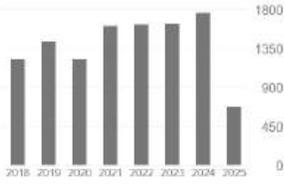
[FOLGEN](#)

[EIGENES PROFIL ERSTELLEN](#)

TITEL	ZITIERT VON	JAHR
Microstructural design of hard coatings PH Mayrhofer, C Mitterer, L Hultman, H Clemens Progress in materials science 51 (8), 1032-1114	1258	2006
Self-organized nanostructures in the Ti–Al–N system PH Mayrhofer, A Höring, L Karlsson, J Sjöväin, T Larsson, C Mitterer, ... Applied Physics Letters 83 (10), 2049-2051	733	2003
Thermal stability of Al–Cr–N hard coatings H Willmann, PH Mayrhofer, POÅ Persson, AE Røtter, L Hultman, ... Scripta Materialia 54 (11), 1847-1851	307	2006
Thermal stability and oxidation resistance of Ti–Al–N coatings L Chen, J Paulitsch, Y Du, PH Mayrhofer Surface and Coatings Technology 206 (11-12), 2954-2960	303	2012
A comparative study on reactive and non-reactive unbalanced magnetron sputter deposition of TiN coatings PH Mayrhofer, F Kunc, J Musil, C Mitterer Thin solid films 415 (1-2), 151-159	299	2002

Zitiert von ALLE ANZEIGEN

	Alle	Seit 2020
Zitate	19422	8564
h-index	75	47
i10-index	279	227



Öffentlicher Zugriff ALLE ANZEIGEN

12 Artikel	128 Artikel
nicht verfügbar	verfügbar

Other honor

- * Editorial Boards: Surface and Coatings Technology, Vacuum
- * Invited talk 78 invited talks at international conferences

Keynote Session II

Coating Materials Design for Harsh Environments – Are Protective Coatings Predictable?

Jochen M. Schneider

Materials Chemistry, RWTH Aachen University, GERMANY

ABSTRACT

Designing the next generation of protective coating materials requires predictive computational approaches that go beyond traditional trial-and-error methods. Key design criteria include synthesizability, mechanical performance, and thermal and chemical stability.

This talk will examine the strengths and limitations of our predictive capabilities—highlighting successful experimental validations as well as cases where theoretical models fall short. Based on this analysis, the presentation will also discuss implications for future material design efforts, particularly in the context of structural and compositional complexity.

Prof. Jochen M. Schneider

Ph.D. Materials
Chemistry
RWTH Aachen University
52056 Aachen, Germany
E-Mail: schneider@mch.rwth-aachen.de



Education

- 2001 Docent (Habilitation), Thin Film Physics,
Linköping University, Sweden
- 1997 Doctor of Philosophy, University of Hull, U.K.
- 1995 Master of Science, University of Hull, U.K.
- 1992 Diplom-Ingenieur (FH), FH Furtwangen, Germany

Positions held

- 2019 - 2021 Guest Professor, National Taiwan University of Science and Technology (NTUST), Taiwan
- 2017 - 2019 Guest Professor, Joint appointment between Materials Physics and Materials Chemistry,
Uppsala University, Sweden
- since 2015 Max Planck Fellow, Max-Planck-Institut für Eisenforschung GmbH (MPIE)
- since 2002 C4-Professor, RWTH Aachen University, since 2009 switched to W3-Professor
- 2002 - 2004 Guest Professor, Uppsala University, Sweden
- 2000 - 2001 Associate Professor, Linköping University, Sweden
- 1999 - 2000 Assistant Professor, Linköping University, Sweden
- 1997 - 2001 Visiting Scientist, ~1 month/year, Lawrence Berkeley National Laboratory, USA
- 1997 - 1999 Post Doc, Linköping University, Sweden

Research

Thin film materials science. Quantum mechanically guided design of materials with tailored thermal- and chemical stability as well as mechanical behavior. Self-reporting materials.

Publications

<https://www.webofscience.com/wos/author/record/A-4701-2012>

> 410 web of science listed publications, > 13.200 citations, h-index=56 (February 2025)

<https://scholar.google.de/citations?user=5kKZxAwAAAAJ&hl=en>

> 17.700 citations, h-index=65 (February 2025)

Recognitions

- 2001 **Sofya Kovalevskaya Prize** awarded by the Alexander von Humboldt Foundation
Laudatio: For excellence in thin film materials science. The Sofja Kovalevskaja Award allows for spending five years building up a working group and working on a high-profile, innovative research project.
- 2005 - 2006 **Program Chair** of the Advanced Surface Engineering Symposium of the American Vacuum Society Meeting in Boston (2005) and San Francisco (2006), USA
- 2007 **Program Chair**, International Conference on Metallurgical Coatings and Thin Films (ICMCTF) in San Diego, USA (approx. 800 contributions)
- 2008 **General Chair**, International Conference on Metallurgical Coatings and Thin Films (ICMCTF) in San Diego, USA (approx. 800 contributions)
- 2012 **Executive Committee Chair** of the Advanced Surface Engineering Division of the American Vacuum Society (AVS)

- 2013 **Fellow of the American Vacuum Society (AVS)** for sustained and outstanding technical contributions in areas of interest to AVS (Science and Technology of materials, interfaces, and processing).
Citation: "For seminal contributions to **low temperature growth** of crystalline alumina and **nanolaminated carbides** and for introducing ab-initio design strategies for hard coatings and protective films"
- 2014-2018 **RWTH Aachen University speaker for SFB TR 87** for phase 2 (budget 12.0 Mio €)
- 2015-2020 **Max Planck Fellow**; outstanding university professors at German universities are appointed by the Max Planck Society to address a scientific subject of common interest and to develop and lead a corresponding scientific research group: DESIGN OF CHARGE DENSITY MODULATED MATERIALS WITH SELF REPORTING BEHAVIOUR, Max-Planck-Institut für Eisenforschung GmbH (MPIE)
- 2015 **RWTH Fellow**; The RWTH Fellowship is awarded to experienced professors with outstanding research achievements that have significantly contributed to the University's success.
- 2018 **Elected scientific member of the Board of Trustees**, Leibniz Institute of Surface Engineering (IOM), Leipzig, Germany
- 2018-2022 **RWTH Aachen University speaker for SFB TR 87** for phase 3 (budget 11.9 Mio €)
- 2019 **Appointed member of the Henry Royce Institute Strategic Facilities Advisory Board**, University of Manchester, Manchester, U.K., <https://www.royce.ac.uk/about-the-royce/>
- 2019 **Faculty 5 teaching award, RWTH Aachen University**; For outstanding didactics and exemplary implementation of modern teaching methods.
University of Manchester, Manchester, U.K., <https://www.royce.ac.uk/about-the-royce/>
- 2020 **Bill Sproul Award and Honorary ICMCTF Lecture Recipient**; The Bill Sproul Award And Honorary ICMCTF lectureship is to recognize the achievements of a mid-career Researcher who has made outstanding scientific and/or technological contributions in areas of interest to the Advanced Surface Engineering Division (ASED) of the AVS, with emphasis in the fields of surface engineering, thin films, and related topics.
<https://icmctf2020.avs.org/bill-sproul-award-and-honorary-icmctf-lecture-recipient/>
- 2022 **Rudolf-Jaeckel-Preis**; The German Vacuum Society (DVG) awards the Rudolf-Jaeckelawards to recognize outstanding achievements in vacuum-based sciences.
<https://www.physik.uni-kl.de/dvg/index.php/dvgpreise/rudolf-jaeckel-preis>
- 2022 **Appointed member of advisory committee of the Wallenberg Initiative Materials Science for Sustainability (WISE)**, Linköping University, Norrköping, Sweden
<https://wise-materials.org>
- 2022 **Acta Materialia Outstanding Reviewer Award**, awarded in recognition of significant contributions made to the quality of the journal.
- 2023 **Honorary doctor**; Faculty of Science and Technology, Uppsala University, Sweden.
Citation: "Prof. Schneider conducts research at the interface between physics and chemistry, uniquely combining theoretical calculations with advanced experimental studies to develop new materials with tailored properties."

Editorial board member in

Scientific Reports (Nature Publishing Group) and *Surface and Coatings Technology* (Elsevier)

Editorial Advisory Board member of

Journal of Applied Physics (American Institute of Physics)

Advisory Editorial Board of

Applied Surface Science Advances (Elsevier)

Keynote Session III

Carbon-based nanocomposites

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ABSTRACT

The mechanical, physical, chemical, biological and tribological properties of carbon-based nanocomposites can be tuned depending on their constitution and microstructure. These materials are therefore highly potent candidates for functional, protective, corrosion and oxidation resistant and tribological coatings, as well as for medical applications. Using HiPIMS for coating opens up additional synthesis parameters compared to d.c. magnetron sputtering. As well as the ability to vary the target power, working gas pressure, working and reactive gas flow, and substrate temperature, three additional synthesis parameters can be selected: pulse length, frequency, and pulse shape. Overall, the ion fraction of the film-forming particles increases in HiPIMS, and the ion energy can be precisely adjusted to selectively vary the deposited energy by ion bombardment during thin film growth. However, other PVD methods, such as d.c. and r.f. magnetron sputtering or arc evaporation, also offer advantages, such as high growth rates. Analytical techniques must be combined to detect the constitution and microstructure. To investigate the chemical composition of the thin films, including the hydrogen content, electron probe microanalysis was combined with elastic recoil detection analysis. Microstructure analysis was performed using a combination of different techniques. Raman spectroscopy suggests the presence of metal-carbon bonds, which are attributable to a nanocrystalline metal carbide phase, as well as the formation of an amorphous, hydrogen-containing carbon network. X-ray diffraction shows nanocrystalline fcc MeC_{1-x}H grains of different sizes (Me: one or more transition metals). Transmission electron microscopy confirmed the structure of the single-phase nanocrystalline MeC_{1-x} grains embedded in a hydrogen-containing amorphous carbon matrix. A clear correlation exists between constitution, microstructure and thin film properties, as discussed for various systems (Ti-C, Ti-Zr-C, Ti-Al-C-N, W-C, V-C and B-C-N), taking into account plasma diagnostics and computer simulations.

Keywords: HiPIMS, magnetron sputtering, carbon-based nanocomposites, microstructure analysis

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Prof. Dr. habil. Sven Ulrich (Male, Birthday: April 2nd 1965, Nationality: German) is Deputy Head of the Institute for Applied Materials, Head of the Department Composite and Thin Films, and is a Professor at the Faculty of Mechanical Engineering at the Karlsruhe Institute of Technology (KIT). He received his diploma degree in Physics 1991 and his PhD in Physics 1996 (both at University of Kaiserslautern, Germany) and is currently the President of the German Vacuum Society and Vize President of the advisory board of the Institute for Surface and Thin Film Analysis in Kaiserslautern, Germany, and a member of the board of the German Physical Society. His research activities focus the understanding of plasma surface interactions during dynamic thin film growth processes on the atomic level and on the identification of mechanisms during the thin film growth itself. Furthermore, he investigates correlations between coating design, plasma conditions, film growth, microstructure, properties and coating behaviour which introduce into applications. He uses various reactive and non-reactive physical vapour deposition techniques as well as plasma assisted chemical vapour deposition methods for the development of protective and functional coatings. He has published more than 160 papers and review articles (sum of the times cited: more than 5,000, average citations per Item: 34, h-index: 35). Additionally, he holds 46 patents.

Keynote Session IV

High-Entropy Ferroelectric/Piezoelectric Epitaxial Films

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ABSTRACT

A high configurational entropy, achieved through a proper design of compositions, can minimize the Gibbs free energy and stabilize the quasi-equilibrium phases in a solid-solution form. This leads to the development of high-entropy materials with unique structural characteristics and excellent performance, which otherwise could not be achieved through conventional pathways. This work develops a high-entropy nonlinear dielectric system based on the expansion of lead magnesium niobate–lead titanate. A dense and uniform distribution of nano-polar regions is observed in the samples owing to the addition of Ba, Hf, and Zr ions, which leads to enhanced performance of nonlinear dielectrics. The fact that no structural phase transformation is detected up to 250 °C, and no noticeable change or a steep drop in structural and electrical characteristics is observed at high temperatures, suggests a robust thermal stability of the dielectric systems developed. In the push for practical applications, the heterostructure has been transferred to Si substrates for MEMS and muscovite substrates for flexible electronics. With these advantages, these materials hold vast potential for applications such as dielectric energy storage, dielectric tunability, piezoelectric, and electrocaloric effects. Thus, this work offers a new high-entropy configuration with elemental modulation and enhanced non-linear dielectric material features.

Keywords: High-Entropy, Ferroelectric, Piezoelectric, Flexible, Sensor

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Education

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Experience

2024- Present: Chair Professor, Department of Materials Science & Engineering, National Tsing Hua University, Taiwan.
2022-2024: Distinguished Professor, Department of Materials Science & Engineering, National Tsing Hua University, Taiwan.
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2008-2015: Assistant Professor, Department of Materials Science & Engineering, National Yang Ming Chiao Tung University, Taiwan

Research Interests

Functional oxide heterostructures, nanostructures, and interfaces for next-generation devices MICAtronics -- solutions for soft transparent technology based on inorganic materials

Awards

- 2025 Micron Chair Professor
- 2024 Fellow, The Materials Research Society – Taiwan
- 2023 Tsing Hua-Delta Distinguished Talent Professor
- 2023 Outstanding Research Award of Ministry of National Science & Technology Council
- 2021 The Taiwan Physical Society Outstanding Paper Award
- 2021 The Materials Science Scientific Paper Award, The Materials Research Society – Taiwan
- 2020 Engineering Research Paper Award, Chinese Institute of Engineers
- 2019 Thomson Reuters Highly Cited Researchers in Cross-Field
- 2018 Thomson Reuters Highly Cited Researchers in Materials Science
- 2018 The Academia Sinica Research Award for Junior Research Investigators
- 2017 Outstanding Research Award of the Ministry of Science and Technology of Taiwan

Representative Publications

1. Y. J. Wang, J. W. Zhang, J. Chu, H. Wang, S. Wu, C. Y. Lo, J. T. Hong, C. Y. Syu, L. S. Hao, I S. Chen, Z. Yang, R. Huang*, C. L. Lin, P. W. Chiu, Y. L. Chueh, Y. C. Chen, C. H. Yeh*, and Y. H. Chu*, "Polarity Modulation in Compositionally Tunable Epitaxial Bi₂O₂Se Thin Films", Nature Commun. accepted.
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Keynote Session V

Surface modification for functions of biomolecule recognition for biomedical devices

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ABSTRACT

A development of medical devices such as artificial organs, biosensors, nanoparticles for drug delivery systems, cell scaffolds for organ on chips needs advanced surface modification to achieve specific functions. Moreover, the optimum surfaces and interface properties of these materials used in devices must be considered in addition to mechanical, chemical, and biological compatibilities.

The interface is the first contact area between the surface of materials and biological species, such as proteins and cells. In general, protein adsorption induces platelet adhesion and activates blood coagulation when the medical device is implanted in the body. When devices are implanted in the body for a long period of time, tissue fibrosis occurs. These are unfavourable events, denoted as foreign body reaction. Thus, we must create functions that inhibit the reactions by material technology. What are the appropriate materials, and surface and interfaces? The researchers have been seeking for the answers based on materials technology, surface science, biology, and medicine.

In this talk, we look at biointerfaces on the artificial lung for long-term use, and of wearable and implantable biosensors, and biofuel cells by nanostructured design of biocompatible polymer. A 2-methacryloyloxyethyl phosphorylcholine (MPC) polymer, which is one of the zwitterionic polymers having excellent biocompatibility has been applied to the surface modification of medical devices [1]. The MPC copolymers can be designed as coating materials for friction reduction from the original material surface and antifouling properties. The stability of MPC copolymer film on the substrate improved by the design of covalent bonding between polymer and substrate for long-term use [2,3]. In addition, the MPC copolymers with modified biomolecules such as enzyme and peptide are applicable to biosensors, and antibacterial surface [4, 5].

Keywords: surface modification, biocompatible polymer, biointerface, biomedical devices

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Education

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Professional Career

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2001 - 2003 Assistant Professor, Department of Materials
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2003 - 2010 Associate Professor, Department of Materials Engineering,
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- ward of research achievement for female researcher, “leading research of biosensor and novel biomaterials” Madoka TAKAI, The Japan Society of Applied Physics, 2012.9.11
- Outstanding Researcher Award on Chemistry and Micro-Nano Systems, “Study on highly sensitive bioanalysis by functionalization of microchip” Madoka TAKAI, Chemistry and Micro-Nano Systems, 2010.6.11

Interest

The interests are basic science of interface between biomolecules or cells and materials, and development of polymer materials for biomedical and healthcare devices, such as artificial organs, biosensors, biofuel cells.

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Keynote Session VI

Exploring Plasma Science through Thin Film Technology and Manufacturing Innovation

Masaru Hori

**Center for Low-temperature Plasma Sciences,
Nagoya University, JAPAN**

ABSTRACT

To achieve carbon neutrality, there is a strong need for energy conservation and emission reduction in semiconductor manufacturing. In particular, the birth of large-scale integrated circuits in the 1980s and the subsequent transition in device development through ultrafine and three-dimensional miniaturization according to Moore's Law correspond exactly to the history of the evolution of plasma process technology and its equipment. To date, significant progress has been made in understanding the physicochemical phenomena occurring in plasma processes, which enable the deposition, etching and surface modification of functional thin films at low temperatures, and systematizing these phenomena as an academic discipline, making them the fundamental technology supporting current thin film processes. However, research and development of state-of-the-art plasma processes for minimization on the nanometer scale and in three dimensions is a continuous process of trial and error, and the waste of energy, resources and labor invested in finding optimum conditions is enormous, and it is only a matter of time before “process failure” occurs.

The approach to overcoming this is to systematize the knowledge discovered so far in semiconductor plasma processes and to build a “process science” that can be directly linked to innovative technologies for green innovation [1-3].

This talk will present an approach to environmentally benign plasma process innovation based on plasma processes in the formation of large-scale integrated circuits, nanographene and thin films such as GaN and Ga₂O₃.

Keywords: Plasma, Science, Green Process, Graphen, GaN

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- [3] M. Hori, *Reviews of modern plasma physics*, **6**:36 (2022) 1-117.

Prof. Masaru Hori

Masaru Hori received his B.E and M.E. degrees from Waseda University, Tokyo, Japan in 1981 and 1983, respectively, and his D.E. degree from Nagoya University, Nagoya, Japan in 1986. He was a researcher with Toshiba Corporation from 1986 to 1992. He was a Research Associate, an Assistant Professor, and then an Associate Professor from 1992 to 2004 with Nagoya University. From 2004 to 2023, he has been a Professor with Nagoya University. From 2019 to 2023, he has been the Director of Center for Low-temperature Plasma Sciences with Nagoya University. From 2023 he is Specially Appointed Professor at the Centre and Professor Emeritus at Nagoya University. His current research interests include low-temperature plasma sciences and their applications to device/material, environment/energy and medicine/agriculture fields.



His achievements include 772 scientific papers, more than 2,113 international conference presentations, 398 invited lectures at international conferences (80 special and keynote lectures), 1,465 domestic lectures (320 invited lectures), 230 registered patents (387 applications), 33 published papers, 18 awards and 65 doctoral degrees awarded.

Brief Curriculum Vitae

Personal Information

Name: Masaru HORI, Nationality: Japan

Contact Information

Center for Low-temperature Plasma Sciences, Nagoya University
Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan

Field of Specialization

Plasma Processing and Diagnostics, Plasma Nano Science, Plasma Materials Engineering, Plasma Medicine and Life Sciences

Education

1981 B. E., Electronics and Communications, Faculty of Science and Engineering, Waseda University, Japan

1983 M. D., Graduate School of Science and Engineering, Waseda University, Japan

1986 Ph. D., Graduate School of Engineering, Nagoya University, Japan
(Doctor of Engineering)

Career

1986-1992 Toshiba Research Laboratory Ltd.

1992-1995 Research assistant, Faculty of Engineering, Nagoya University

1995-2004 Assistant Professor, Faculty of Engineering, Nagoya University

1997 Aug-Dec Visiting Researcher, Cavendish Laboratory, University of Cambridge, UK

2004-2023 Professor, Graduate School of Engineering, Nagoya University

2009-2013 Director of the Plasma Nano-Engineering Research Centre, Graduate School of Engineering, Nagoya University

2013-2019 Director, International Innovation Centre for Plasma Medical Science, Nagoya University

2014-2019 Professor at the Nagoya University Organization for the Creation of Future Society

2016-2019 Professor and Assistant Director of the Organization for the Creation of Future Society,

- Nagoya University
 2019-2023 Professor and Director of the Research Centre for Low Temperature Plasma Science,
 Nagoya University
 2023-present Specially Appointed Professor, Research Centre for Low Temperature Plasma
 Science, Nagoya University Professor Emeritus, Nagoya University

Achievements

772 international scientific papers, more than 2,113 international conference paper presentations and 398 invited lectures at international conferences (80 special and keynote lectures) and 1,465 domestic presentations (320 invited lectures), 230 patent registrations (387 applications), 33 publications, 65 doctoral degrees awarded

Major awards received in the past

- 2003 1st Plasma Electronics Award
 2010 The Commendation for Science and Technology by the Minister of Education, Culture,
 Sports, Science and Technology, Science and Technology Award (Research Category)
 2011 Award for Meritorious Service to Industry-Academia-Government Collaboration
 (Minister of State for Science and Technology Policy Award).
 2012 Plasma Material Science Award (Basic Category Award)
 2012 Applied Physics Society of Japan Fellow Award
 2013 11th Plasma Electronics Award
 2015 37th Applied Physics Society Paper Award
 2018 The Plasma Medicine Award
 2019 K-T Rie Award Sept. 4 K-T Rie Award
 2020 18th Plasma Electronics Award
 2020 AAPPS-DPP Plasma Innovation Prize
 2021 DPS Nishizawa Award
 2022 43rd Japan Society of Applied Physics Best Paper Award
 2022 Reactive Plasma Award
 2023 Medal with Purple Ribbon
 2023 Chunichi Bunka Prize
 2024 Applied Physics Society Achievement Award
 2024 Kenichiro Ishii Award

Short Course (I)

Topic:

Coating Materials Design

Date/Time/Place:

(1) 14:00-17:00, Oct. 25 / Room 301

(2) 09:00-12:00, Oct. 26 / Room 204

Content:

This tutorial explores the integration of theoretical and experimental strategies for designing metastable coating materials to meet specific mechanical and thermal requirements. The tutorial is subdivided into two sections of 3 hours each.

In the first section we will discuss the incorporation of impurities during thin-film growth and their implications for elastic properties. As a model system, we will examine the intentional addition of oxygen to transition metal aluminum nitrides and its effects on both mechanical properties and thermal stability.

In the second section the formation of metastable thin film materials is predicted, and the predictions are compared to experimental data. Here, TiAlN and VAlN serve as model systems.

Key techniques, such as density functional theory (DFT) calculations and high-resolution structural and chemical analysis, will be briefly introduced in the context of materials design.

Course Objectives

Provide a first exposure of MSc and PhD students to combined theoretical and experimental strategies for designing metastable coating materials to meet specific mechanical and thermal requirements.

Course Description

In this flipped classroom tutorial, participants are encouraged to review key publications beforehand, enabling in-depth discussions during the tutorial. The corresponding PDF's will be provided. Also, the lecture slides will be provided after the lecture.

Course content

The course is based on the following publications:

Section 1:

- J.M. Schneider, A. Anders, B. Hjörvarsson, and L. Hultman
Magnetic-field-dependent plasma composition of a pulsed arc in a high-vacuum ambient
Applied Physics Letters **76**(12) (2000) 1531-1533.
[doi.org/10.1063/1.126086]

- J.M. Schneider, B. Hjörvarsson, X. Wang, and L. Hultman
On the effect of hydrogen incorporation in strontium titanate layers grown by high vacuum magnetron sputtering
Applied Physics Letters **75**(22) (1999) 3476-3478.
[doi.org/10.1063/1.125301]
- J.M. Schneider, A. Anders, B. Hjörvarsson, I. Petrov, K. Macák, U. Helmersson, and J.-E. Sundgren
Hydrogen uptake in alumina thin films synthesized from an aluminum plasma stream in an oxygen ambient
Applied Physics Letters **74**(2) (1999) 200-202.
[doi.org/10.1063/1.123292]
- K.P. Shaha, H. Rueß, S. Rotert, M. to Baben, D. Music, and J.M. Schneider
Nonmetal sublattice population induced defect structure in transition metal aluminum oxynitrides
Applied Physics Letters **103**(22) (2013) 221905.
[doi.org/10.1063/1.4833835]
- M. Hans, M. to Baben, D. Music, J. Ebenhöch, D. Primetzhofer, D. Kurapov, M. Arndt, H. Rudigier, and J.M. Schneider
Effect of oxygen incorporation on the structure and elasticity of Ti-Al-O-N coatings synthesized by cathodic arc and high power pulsed magnetron sputtering
Journal of Applied Physics **116**(9) (2014) 093515.
[doi.org/10.1063/1.4894776]
- D.M. Holzapfel, D. Music, M. Hans, S. Wolff-Goodrich, D. Holec, D. Bogdanovski, M. Arndt, A.O. Eriksson, K. Yalamanchili, D. Primetzhofer, C.H. Liebscher, and J.M. Schneider
Enhanced thermal stability of (Ti,Al)N coatings by oxygen incorporation
Acta Materialia **218** (2021) 117204.
[doi.org/10.1016/j.actamat.2021.117204]

Section 2:

- S. Liu, K. Chang, S. Mráz, X. Chen, M. Hans, D. Music, D. Primetzhofer, and J.M. Schneider
Modeling of metastable phase formation for sputtered $Ti_{1-x}Al_xN$ thin films
Acta Materialia **165** (2019) 615-625.
[doi.org/10.1016/j.actamat.2018.12.004]
- S. Liu, K. Chang, D. Music, X. Chen, S. Mráz, D. Bogdanovski, M. Hans, D. Primetzhofer, and J.M. Schneider
Stress-dependent prediction of metastable phase formation for magnetron-sputtered $V_{1-x}Al_xN$ and $Ti_{1-x}Al_xN$ thin films
Acta Materialia **196** (2020) 313-324.
[doi.org/10.1016/j.actamat.2020.06.044]

Lecturer:



Prof. Jochen Schneider

Materials Chemistry, RWTH Aachen University, Aachen, GERMANY

Short Curriculum Vitae

Jochen M. Schneider is Professor of Materials Chemistry at RWTH Aachen University, Germany. His research focuses on the quantum-mechanically guided design of thin films with tailored thermal and chemical stability, as well as elasticity. He also designs self-reporting materials. In 2001, Jochen was awarded the Sofya Kovalevskaya Prize by the Alexander von Humboldt Foundation. He was named a Fellow of the American Vacuum Society (AVS) in 2013 and, in 2015, was appointed as a Max Planck Fellow. That same year, he was honored as an RWTH Fellow. In 2020, Jochen received the Bill Sproul Award and Honorary ICMCTF Lectureship. He was further recognized in 2022 with the Rudolf Jaeckel Award from the German Vacuum and most recently, in 2023, he was conferred an Honorary Doctorate by the Faculty of Science and Technology at Uppsala University, Sweden. Jochen has supervised 42 Ph.D. graduates and advised 28 postdoctoral researchers.

Short Course (II)

Topic:

X-Ray Photoelectron Spectroscopy

Date/Time/Place:

14:00-16:00, Oct. 28 (online)

Content:

Course Objectives

After successful completion of the course the students will:

- understand the theory and practice of the surface analysis by XPS
- appreciate the possibilities and limitations of the XPS technique
- be able to critically assess research in which XPS has been applied
- understand and interpret results obtained with XPS

Course Description

The purpose of this course is to give an in-depth introduction and understanding of the most commonly used analytical method for elemental and chemical analysis of the near-surface region, namely X-ray photoelectron spectroscopy (XPS or ESCA). The aim of the course is to obtain:

- a comprehensive understanding of XPS
- a good knowledge of involved theoretical aspects
- systematic knowledge of current practices in the analysis of surfaces
- a knowledge on the used analytical equipment

The course will be based on the recent XPS review papers:

1. G. Greczynski and L. Hultman, "X-ray photoelectron spectroscopy: towards reliable binding energy referencing", *Progress in Materials Science* 107 (2020) 100591
2. G. Greczynski, L. Hultman "A step-by-step guide to perform X-ray photoelectron spectroscopy", *J. Appl. Phys.* 132 (2022) 011101
3. G. Greczynski, R.T. Haasch, N. Hellgren, E. Lewin, L. Hultman, "X-ray photoelectron spectroscopy of thin films", *Nature Reviews Methods Primers* 3 (2023) 40
4. G. Greczynski and L. Hultman, "Binding energy referencing in X-ray photoelectron spectroscopy", *Nature Reviews Materials* 10 (2025) 62

Course content

- Basic principles
- Sample preparation and handling
- Instrument setup

- Data acquisition
- Spectra analysis and interpretation
- Results presentation
- Applications examples
- Examples of artifacts
- Recent developments

Lecturer:



Prof. Grzegorz Greczynski

Department of Physics, Chemistry and Biology (IFM), SWEDEN

Short Curriculum Vitae

Grzegorz (Greg) Greczynski is Professor in the Department of Physics, Linköping University (LiU) and the head of the Fundamental Science of Thin Films Group. He has nearly 30 years-long experience with XPS. He wrote several top-cited XPS papers featured as the “hot paper” and the “highly cited paper” on the Web of Science website. He has published more than 200 peer-reviewed articles that have been cited more than 15000 times (~3200 citations during 2024 only, h index of 50). He has served as the program chair and the general chair for International Conference on Metallurgical Coatings and Thin Films (ICMCTF). He is presently Chair Elect of the Advanced Surface Engineering Division of American Vacuum Society and will serve as the General Chair in 2025. In 2018 he was nominated Fellow of the American Vacuum Society for "seminal contributions to nondestructive X-ray photoelectron spectroscopy (XPS) surface analysis, and the development of novel next-generation HiPIMS metal-ion deposition techniques". From 2023 Greczynski is included in the prestigious “World’s top 2% scientist” list of Stanford University.

Tutorial Lecture

Topic:

Control of Microstructure Evolution During Sputter Deposition

Time/Date/Place:

10:40-12:00, Oct. 27, Room 204

Content:

This module will elucidate the fundamental processes of film nucleation and growth and how they can be manipulated by low-energy metal and gas ion fluxes to achieve high-quality films at low deposition temperatures

- Film growth processes-nucleation, coalescence, competitive grain growth, recrystallization
 - Zone diagrams
 - Effects of sputtered atoms energy
 - Effects of reactive species.
 - Texture inheritance
 - Metal-ion etch and adhesion control
 - Kinetic roughing and surface facet formation
- Use of low-energy ion bombardment to control microstructure during low temperature film growth
 - Effects of gas-ion energy
 - Use of high fluxes of low-energy gas ions; low-temperature sputter epitaxy
 - HiPIMS – source of energetic metal ions
 - Use of synchronized bias in HIPIMS
 - Hybrid HiPIMS/DCMS co-sputtering
 - Light metal-ions; supersaturated metastable TM nitrides
 - Heavy metal ions; low temperature, dense, stress-free hard coatings

Lecturer:



Prof. Ivan Petrov

PhD, D.h.c., Professor

Materials Research Laboratory, Univ. of Illinois at Urbana-Champaign, USA

Department of Physics, Linköping University, Sweden

TACT 2025 Invited Speakers

Symposium A. Coatings for Sustainable Energy

Prof. Piotr Jasiński

Advanced Materials Center, Faculty of Electronics, Telecommunications and Informatics, Gdańsk University of Technology, Poland

Topic: Modification of fuel electrode for efficient co-electrolysis process

Prof. Beata Bochentyn

Faculty of Applied Physics and Mathematics, Institute of Nanotechnology and Materials Engineering, Gdańsk University of Technology, Poland

Topic: Methods to improve the stability and catalytic activity of biogas-fed Direct Internal Reforming Solid Oxide Fuel Cells: the role of catalytic layers and exsolved metallic nanoparticles

Prof. Fu-Ming Wang

National Taiwan University of Technology, Taiwan

Topic: Tailoring the Lithium Deposition on Cu Substrate by a Functionalized-polysiloxane Layer

Prof. Jeng-Kuei Chang

National Yang Ming Chiao Tung University, Taiwan

Topic: Oxide-Based Quasi-Solid-Electrolyte Layers for High-Energy-Density Lithium Batteries

Prof. Tsan-Yao Chen

National Tsing Hua University, Taiwan

Topic: Direct bonding between Single Atom Ag, PF3T nanocluster and TiO₂ leads the Ultra-stable Visible-Light-Driven Photocatalytic H₂ Production

Prof. Peng-Wei Chu

National Tsing Hua University, Taiwan

Topic: Characterizing the Microstructure of Electrodeposited Mg Layers for Anode-Free Rechargeable Mg Batteries

Prof. Chieh-Ting Lin

National Chung Hsing University, Taiwan

Topic: Advancing Hybrid Sn–Pb Perovskite Solar Cells via Interfacial Engineering, Crystal Growth Control, and Transport Layer Optimization

Prof. Heng-Jui Liu

National Chung Hsing University, Taiwan

Topic: Large-Scale 2D Transition Metal Dichalcogenides-based thin film heterostructures for Photoelectrochemical water splitting

Prof. Wen-Yueh Yu

National Taiwan University of Technology, Taiwan

Topic: Electrochemical Reduction of Furfural on Copper Electrode Enhanced by Metal–Organic Framework Overlayer

Prof. Han-Ki Kim

Sungkyunkwan University, Republic of Korea

Topic: Soft Sputtering of Multi-Component TCO Top Electrodes for Semi-Transparent Perovskite Photovoltaics in Smart Windows and Electric Vehicles

Prof. Hsin-Chih Huang

National Formosa University, Taiwan

Topic: Heterostructured Catalysts Derived from Layered Double Hydroxides for Enhanced Oxygen Evolution Reaction Activity

Prof. He-Yun Du

Ming Chi University of Technology, Taiwan

Topic: Mapping Electrochemical and Structural Properties of 2D Materials

Prof. Patcharawat Charoen-amornkitt

King Mongkut's University of Technology Thonburi, Thailand

Topic: Engineering Heterogeneous Electrode Coating to Enhance Proton Exchange Membrane Water Electrolyzer Performance

Prof. Shao-Ju Shih

National Taiwan University of Science and Technology, Taiwan

Topic: Mesoporous SiO₂ and PMMA composite thick films for radiative cooling applications

Prof. Daniel R. Killelea

Department of Chemistry, Loyola University Chicago, Chicago, IL USA

Topic: Oxidation of Silver and Rhodium Surfaces

Symposium B. Nanostructured and Nanocomposite Coatings

Prof. Hiroshi Masumoto

Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Japan

Topic: Novel Phenomena in Magnetic Metal Nanogranules-Insulating Ceramics Nanocomposite Thin Films

Prof. Chen-Kuei Chung

Department of Mechanical Engineering, National Cheng-Kung University, Taiwan

Topic: Advances in the Fabrication of Nanoporous Anodic Aluminum Oxide and Its Applications to Sensors

Prof. Pham Duc Thang

Faculty of Physics, VNU University of Science, Vietnam National University (VNU), Vietnam

Topic: High-performance electrochemical/photoelectrochemical sensors based on nano-structured and composite Cu metal oxides

Prof. Nguyen Hoang Luong

Vietnam National University, Hanoi, University of Science (VNU-HUS), Vietnam

Topic: Tailoring magnetic properties of FePt thin films through annealing conditions

Prof. Yoshitada Morikawa

Osaka University, Japan

Topic: Origin for the Colossal Permittivity in doped TiO₂

Prof. Fabrice Gourbilleau

Centre national de la recherche scientifique (CNRS), France

Topic: SrVO thin films for opto-electronic applications

Prof. Bui Nguyen Quoc Trinh

Vietnam National University, Hanoi, Vietnam Japan University, Vietnam

Topic: Co-Doping CuO-Based Thin Films: Simulation and Experiment Correlation

Prof. Akihiko Fujiwara

Kwansei Gakuin University, Japan

Topic: Full Solution-processed Metal Oxide Semiconductor devices: Issues and Perspectives

Prof. Thi Nghi Nhan Nguyen

National Formosa University, Taiwan

Topic: Energy Harvesting: Piezoelectric Materials for Sustainable Environmental Monitoring and Energy Conversion

Prof. Fan-Yi Ouyang

Department of Engineering and System Science, National Tsing Hua University, Taiwan

Topic: Self-assembled monolayers for high-reliability Ag interconnects: A new approach to suppress electrochemical migration

Prof. Tsuyoshi Yoshitake

Department of Advanced Energy Science and Engineering, Kyushu University, Japan

Topic: Quenched-produced diamond (Q-dia) films by physical vapor deposition and their applications

Dr. Jin Kawakita

Advanced Photovoltaics Center, National Institute for Materials Science, Japan

Topic: Enhanced Moisture Detection Using Nanocoated Micro-Galvanic Arrays with Submicron Gaps

Prof. Tae-Wook Kim

Department of Flexible and Printable Electronics, Department of JBNU-KIST Industry Academia Convergence Research, Jeonbuk National University, Jeonju, Korea

Topic: Giant 2D Single-Crystalline Metallic Nanosheets: Synthesis and Assembly

Prof. Zaoli Zhang

Erich Schmid institute, Austrian Academy of Sciences, Austria

Topic: Design new nanostructure coatings by planar defects

Prof. Toshinori Ozaki

Kwansei Gakuin University, Japan

Topic: Effect of Low-energy Ion Irradiation on GdBa₂Cu₃O_y Superconducting Thin Films

Prof. Pankaj Koinkar

Tokushima University, Japan

Topic: Raising Photocatalytic activity using metal/semiconductor oxide nanocomposites for the photodegradation of organic pollutants

Symposium C. Semiconductor, Optoelectronic and Flexible Device Films

Prof. Yi-Chia Chou

Department of Materials Science and Engineering, National Taiwan University, Taiwan

Topic: Low dimensional nitride-based material system for neuromorphic computing

Prof. Yann-Wen Lan

Department of Physics, National Taiwan Normal University, Taiwan

Topic: Synthesis of Sliding ferroelectric van der Waals materials for 2D memory transistors

Prof. Johnny Ho

Department of Materials Science and Engineering, City University of Hong Kong, Hongkong, China

Topic: Tellurium-Based Electronics

Prof. Daisuke Kiriya

Department of Basic Science/Department of Integrated Sciences, The University of Tokyo, Japan

Topic: Molecular Modulation of Transition Metal Dichalcogenides

Prof. Lam Nguyen Dinh

University of Engineering Technology, The University of Da-nang, Vietnam

Topic: Structural, Optical, Magnetic, and Photocatalytic Properties of Multi-Element Doped ZnO Nanomaterials

Prof. Xinge Yu

City University of Hong Kong, Hongkong, China

Topic: Thin soft air and sweat permeable electronics for healthcare monitoring

Prof. Chang-Hyun Kim

University of Ottawa, Canada

Topic: Beyond 0 and 1: Thin-Film Transistors for Multi-Valued Logic Circuits

Prof. Minoru Sasaki

Toyota Technological Institute, Japan

Topic: Pasting Photoresist Film with Latent Image for Patterning 3D Samples Beyond Diffraction Limit

Prof. Kenji Ishikawa

Center for low temperature plasma sciences, Japan

Topic: Leading edge semiconductor plasma processing with energy-efficient, environmentally benign, evolutionary, and educational (E4) assurance

Prof. Dong Wang

Department of Advanced Environmental Science and Engineering, Kyushu University, Japan

Topic: Controlling effective Schottky barrier height by inserting various ultrathin insulators between aluminum and germanium

Prof. Myungjae Lee

Department of Materials Science and Engineering, Seoul National University, Korea

Topic: Ultrathin waveguides for van-der-Waals optoelectronics

Prof. Jae Su Yu

Department of Electronic Engineering, Kyung Hee University, Korea

Topic: Flexible Composite Films Based on Inorganic Particles Embedded Polymers for Energy Harvesting and Sensing Applications

Prof. Shih-Nan Hsiao

Center for Low-temperature Plasma Sciences, Nagoya University, Japan

Topic: Anisotropic Atomic Layer Etching of HfO₂ at Room Temperature using Halogen-Free Plasmas

Prof. Chien-Yie Tsay

Feng Chia University, Taiwan

Topic: Enhanced Physical Properties of Magnetron Sputtered Ga₂O₃ Thin Films via Sn Doping and Their Application in Self Powered Solar Blind Photodetectors

Symposium D. Tribological and Protective Coatings

Dr. Alex Leide

UK Atomic Energy Authority, UK

Topic: Residual stress, defect, and micromechanical characterization of ion irradiated SiC

Prof. Yu-Lin Kuo

Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taiwan

Topic: Nitriding CoCrNi Medium-Entropy Alloy with Atmospheric Pressure Plasma Jet: Enhancements in Wear Performance

Prof. Abdelrahman Zkria Mohamed Ahmed

Department of Internationalization and Future Conception, Kyushu University, Japan

Topic: Quenched-produced Diamond Coatings at Room Temperature: Tribological and Corrosion Resistance Performance

Prof. Daniel Lundin

Plasma and Coatings Physics Division, Department of Physics, Chemistry and Biology, Linköping University, Sweden

Topic: Towards a Deeper Understanding of Reactive HiPIMS Discharges Through Ionization Region Modeling

Prof. Tetsuhide Shimizu

Tokyo Metropolitan University, Japan

Topic: Selective Carbon Ion Acceleration as a Pathway for Stress-Controlled DLC Film Growth

Dr. Jun Zhang

KLA Instrument, Shanghai, China

Topic: KLA Instruments Solutions for Thin Film Measurement and Characterization

Symposium E. Organic and Biological Coatings

Prof. Sandra Rodil

Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico

Topic: Surface Engineering for Orthopaedic and Dental Implants: Tailoring Osteoinduction, Inflammation, and Antibacterial Properties

Prof. Yung Chang

Department of Chemical Engineering of Chung Yuan Christian University, Taiwan

Topic: Bio-inspired Zwitterionic Interface

Prof. Fang Xie

Department of Materials, Imperial College London, UK

Topic: Plasmonic Nanostructure Arrays for Enhanced Fluorescence: Biosensing and Bioimaging Applications

Prof. Yoshinori Sunaga

Institute for Research Initiatives, Nara Institute of Science and Technology (NAIST), Japan

Topic: Biocompatible Film Coated Implantable Devices for In Vivo Neural Imaging and Optical Stimulation

Dr. Kuang-Chih Tso

Institute for Research Initiatives, Nara Institute of Science and Technology (NAIST), Japan

Topic: Scalable Artificial Vision Device Using CBD-IrO_x Electrodes and Smart CMOS for High-Resolution Retinal Stimulation

Prof. Han-Cheol Choe

Chosun University, Korea

Topic: Bioactive surface modification for bio-implant

Prof. Peng Chen

Tohoku University, Japan

Topic: Smart Surface Functionalization of Titanium for Dual Antibacterial and Osteoconductive Functions

Symposium F. Medium/High Entropy Coatings for Functional Applications

Prof. Chuan-Feng Shih

Department of Electrical Engineering, National Cheng Kung University, Taiwan

Topic: Versatile Applications of High-Entropy Nitride Thin Films

Prof. Erik Lewin

Uppsala university, Sweden

Topic: Epitaxy and twinning in sputter-deposited cantor alloy thin films

Prof. Pavel Souček

Masaryk University, Czech Republic

Topic: Refractory metal-based high entropy (CrHfMoTaW)_xN_y ceramics deposited by HiPIMS

Prof. Hideyuki Murakami

National Institute for Materials Science, Japan

Topic: Medium to High Entropy Alloy Coatings for High Temperature Applications

Prof. Hung-Wei Yen

Department of Materials Science & Engineering, National Taiwan University, Taiwan

Topic: Tailoring CoCrNi Medium-Entropy Alloys through Silicon Alloying for Enhanced Hydrogen Embrittlement Resistance

Symposium G. Advancing Coatings and Thin Films through Characterization, Simulation, Modeling, and Data Science

Dr. Yen-Ju Wu

Data-driven Inorganic Materials Group, Center for Basic Research on Materials, National Institute for Materials Science (NIMS), Japan

Topic: Data-Driven Design of Multi-Element Thermal Insulating Thin Films for Advanced Thermal Management

Prof. David Holec

Computational Materials Science group, Department of Materials Science, Montanuniversität Leoben, Austria

Topic: Multi-method workflow for simulating tensorial properties of amorphous thin films: case studies of a-SiN and a-WBC thin films

Prof. Suneel Kumar Kodambaka

Materials Science and Engineering, Virginia Tech, USA

Topic: In situ Scanning Electron Microscopy Studies of Graphene Growth on Molten Metals

Prof. Ryota Shimizu

Institute for Molecular Science, National Institute of Natural Sciences, Japan

Topic: Hydrogen Charge-State Tuning in Metal-Hydride Thin Films and Application of an Autonomous Thin-Film Growth System

Prof. Thomas Schütte

PLASUS GmbH, Germany

Topic: Cutting-Edge Process Monitoring Techniques for Thin Film Coatings for Process Development, Production Control and Machine Learning (ML)

Prof. Yu-Lin Shen

Department of Mechanical Engineering, University of New Mexico, USA

Topic: Compression vs. Tension-Induced Wrinkle Formation on Thin Film/Compliant Substrate Structures: A Numerical Simulation Study

TACT 2025 Symposium

Symposium A. Coatings for Sustainable Energy

The rational design of materials and enhancing their physicochemical properties are fundamental to advancing renewable and sustainable energy technologies. This symposium highlights recent advances in materials development for sustainable fuel production, energy conservation, storage, and conversion systems. We welcome contributions focusing on materials design, interface engineering, performance optimization, durability studies, scale-up strategies, and sustainable manufacturing processes. Through this comprehensive platform, we aim to address challenges in developing next-generation energy technologies while promoting sustainable solutions for a cleaner energy future. The symposium welcomes contributions in, but not limited to, the following areas:

- **Advanced Batteries**
 - Lithium-ion batteries
 - Sodium-ion batteries
 - Zinc-ion batteries
 - Metal-air batteries
 - Redox flow batteries
- **Fuel Cell Technologies**
 - Proton Exchange Membrane (PEM) fuel cells
 - Solid Oxide Fuel Cells (SOFC)
 - Other fuel cells
- **Clean Fuel Production and Storage**
 - Water electrolysis technologies
 - Solar fuel production
 - Hydrogen storage solutions
 - CO₂ conversion and storage
- **Solar Energy Technologies**
 - Silicon-based solar cells
 - Perovskite solar cells
 - Cu₂ZnSnS₄ (CZTS) solar cells
 - Organic photovoltaics
- **Emerging Energy Technologies**
 - Thermoelectric devices
 - Novel illumination technologies
 - Plasma-based energy systems

Symposium Chair

Prof. Chen-Hao Wang (王丞浩)

chwang@mail.ntust.edu.tw

Professor, Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taiwan

Co-Chair

Prof. Wei-Ren Liu (劉偉仁)

Professor, Department of Chemical Engineering, Chung Yuan Christian University, Taiwan

Prof. Chih-Liang Wang (王致曉)

Associate Professor, Department of Materials Science and Engineering, National Tsing Hua University, Taiwan

Prof. Tzu-Ying Lin (林姿瑩)

Assistant Professor, Department of Materials Science and Engineering, National Tsing Hua University, Taiwan

Symposium B. Nanostructured and Nanocomposite Coatings

To render thin films with extraordinary properties such as electronic, optical, magnetic, thermal or mechanical properties, novel structure into nanoscale design as nanostructured and nanocomposite coatings is often demanded. The nanostructured and nanocomposite coatings are considered to consist of various components in the structure with at least one feature size in the nanosize region such as a matrix and an embedded nanocrystalline phase. This session will concentrate on synthesis, structure design, properties, and applications of such nanocomposite films (thin or thick) for protection or for functional applications, stand-alone or as coatings.

Symposium Chair

Prof. Kao-Shuo Chang (張高碩)

kschang@mail.ncku.edu.tw

Professor, Department of Materials Science and Engineering, National Cheng Kung University, Taiwan

Co-Chair

Prof. Bui Nguyen Quoc Trinh

Professor, Vietnam National University, Hanoi, Vietnam Japan University, Vietnam

Prof. Akihiko Fujiwara

Professor, Kwansei Gakuin University, Japan

Prof. Chen-Kuei Chung (鍾震桂)

Professor, Department of Mechanical Engineering, National Cheng Kung University, Taiwan

Prof. Fan-Yi Ouyang (歐陽汎怡)

Professor, Department of Engineering and System Science, National Tsing Hua University, Taiwan

Prof. Ing-Song Yu (余英松)

Professor, Department of Materials Science and Engineering, National Dong Hwa University, Taiwan

Prof. Thi Nghi Nhan Nguyen (阮氏儀仁)

Assistant Professor, Department of Materials Science and Engineering, National Formosa University, Taiwan

Symposium C. Semiconductor, Optoelectronic and Flexible Device Films

This session aims to provide a discussion forum for the fundamental material investigations and applications of semiconductor and optoelectronic films. Technical topics will cover, but not limited to, processing techniques, material characteristics analysis, device properties, etc... In the applications, research laboratories, academic institutes and vendors are welcome to submit papers on MEMS, consumer electronics, biomedical devices, optical devices and portable electronics.

Symposium Chair**Prof. Ying-Hao Chu (朱英豪)**

yhchu@mx.nthu.edu.tw

Distinguished Professor, Department of Materials Science and Engineering, National Tsing Hua University, Taiwan

Co-Chair**Prof. Jr-Hau He (何志浩)**

Professor, City University of HongKong, China

Prof. Chia-Yun Chen (陳嘉勻)

Professor, Department of Materials Science and Engineering, National Cheng Kung University, Taiwan

Prof. Ying-Chih Lai (賴盈至)

Distinguished Professor, Department of Materials Science and Engineering, National Chung Hsing University, Taiwan

Symposium D. Tribological and Protective Coatings

This symposium focused on thin film & coatings for tribological and protective applications. Aspects concerning the mechanical behavior and microstructural evolution under service environment are within the symposium scope. Papers working on microstructural design, fabrication, modeling, and characterization techniques are of interest. Fabrication methods of coatings includes PVD, CVD, electrochemical deposition, cold spray, and thermal spray, are of interest. Contributions on protective layers against extreme environments, nanocomposite films with multifunction, nanostructured coatings for advanced automotive, aerospace, and machining applications, are encouraged. Abstracts concerning manufacture, structural analysis, mechanical performance and characterization of tribological coatings and engineered surface are also welcome.

Symposium Chair

Prof. Bo-Shiuan Li (李伯軒)

bsli@mail.nsysu.edu.tw

Assistant professor, Department of Mechanical and Electro-Mechanical Engineering, National Sun-Yat Sen University, Taiwan

Co-Chair

Dr. Alex Leide

Royal Academy of Engineering Research Fellow, United Kingdom Atomic Energy Agency, United Kingdom

Prof. Fan-Bean Wu (吳芳賓)

Professor, Department of Materials Science and Engineering, National United University, Taiwan

Prof. Yu-Jen Chou (周育任)

Associate Professor, Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taiwan

Prof. Kuan-Che Lan (藍貫哲)

Assistant Professor, Institute of Nuclear Engineering and Science, National Tsing Hua University, Taiwan

Symposium E. Organic and Biological Coatings

This session aims to provide a discussion forum for biomimetic organic hybrid coatings used for replacement and repair of biomedical devices, including certain types of metal, glass ceramic, and polymer materials. Furthermore, advanced organic and biological coatings applied in bioelectronics, biosensors, or tissue engineering are also important topics. The symposium provides a platform for becoming its renowned unsurpassed networking and relationship-building opportunities by presenting and discussing the following contemporary topics, but not limited to:

(1) organic materials and devices coatings; (2) self-assembly hybrid materials coatings; (3) biointerfaces; (4) bioelectronics and biosensors; (5) electrospinning coatings; (6) plasma treatment; (7) biomedical applications.

Symposium Chair

Prof. Ren-Jei Chung (鍾仁傑)

rjchung@ntut.edu.tw

Distinguished Professor, Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taiwan

Co-Chair

Prof. Her-Hsiung Huang (黃何雄)

Lifetime Distinguished Professor, Department of Dentistry, National Yang Ming Chiao Tung University, Taiwan

Prof. Po-Yu Chen (陳柏宇)

Professor, Department of Materials Science and Engineering, National Tsing Hua University, Taiwan

Prof. Ting-Yu Liu (劉定宇)

Distinguished Professor, Department of Materials Engineering, Ming Chi University of Technology, Taiwan

Symposium F. Medium/High Entropy Coatings for Functional Applications

With the inspiration of high-entropy alloys, the design concept of novel materials has broken through the scope of traditional alloys, particularly offering unprecedented properties and opportunities for a wide range of applications. Symposium F provides a discussion and networking platform for the fundamental investigations, latest developments and potential applications of medium/high entropy materials coatings that include metallic alloys, medium/high-entropy alloys and oxides, etc.

Technical topics include, but are not limited to, the processing methods, theory and modeling, characterizations, measurement techniques, properties and deformation mechanisms of medium/high entropy material coatings. Scientists, engineers and students with interest in the development of medium/high entropy materials coatings for applications to the fields of energy, aerospace, surface engineering, micro-and-optoelectronics, MEMS/NEMS, biomedical, etc., are all welcome to attend.

Symposium Chair

Prof. Shih-Hsun Chen (陳士勳)

brucechen@nycu.edu.tw

Associate Professor, Department of Mechanical Engineering, National Yang Ming Chiao Tung University, Taiwan

Co-Chair

Prof. Erik Lewin

Associate Professor, Department of Chemistry, Uppsala University, Sweden

Prof. Jyh-Wei Lee (李志偉)

Chair Professor, Department of Materials Engineering, Ming Chi University of Technology, Taiwan

Prof. Jyh-Ming Ting (丁志明)

Distinguished Professor, Department of Materials Science and Engineering, National Cheng Kung University, Taiwan

Prof. Wen-Hui Cheng (鄭文惠)

Assistant Professor, Department of Materials Science and Engineering, National Cheng Kung University, Taiwan

Symposium G. Advancing Coatings and Thin Films through Characterization, Simulation, Modeling, and Data Science

This Symposium highlights cutting-edge advancements in the characterization, simulation, modeling, and data-driven study of coatings and thin films. It emphasizes microstructural, mechanical, and chemical characterization using advanced techniques (e.g., TEM, SEM, spectroscopy), high-throughput synthesis, automated data analysis, and machine learning applications to understand structure-property relationships. The symposium is organized into four key areas: Microstructural Characterization, which explores advanced spatial and in situ techniques; Mechanical Testing, which focuses on nanomechanical methods under extreme conditions; High-Throughput Development, which emphasizes combinatorial synthesis and AI-driven analysis; and Computational Materials Design, which integrates simulation, modeling, machine learning, and process modeling for materials discovery.

Symposium Chair

Prof. Po-Liang Liu (劉柏良)

pliu@dragon.nchu.edu.tw

Professor, Graduate Institute of Precision Engineering, National Chung Hsing University, Taiwan

Co-Chair

Prof. David Holec

Professor, Montanuniversität Leoben, Austria

Prof. Chang-Fu Dee

Professor, University Kebangsaan Malaysia (UKM), Malaysia

Prof. Dr. Chao-Cheng Kaun (關肇正)

Research Fellow, Research Center for Applied Sciences, Academia Sinica, Taiwan

Prof. Hsin-Yi Tiffany Chen (陳馨怡)

Associate Professor, Department of Engineering and System Science, National Tsing Hua University, Taiwan

Prof. Jen-Chuan Tung (董人銓)

Associate Professor, Center for General Education, Chang Gung University, Taiwan

Prof. Yu-Lin Shen

Professor, Department of Mechanical Engineering, University of New Mexico, USA

TACT 2025 Presentation Guidelines

Oral Presentation Guidelines

- **Arrival Time**

All speakers are kindly requested to arrive at their assigned Session Room at least 15 minutes before the session begins.

- **Presentation Equipment**

- Speakers are encouraged to bring their own laptops (Microsoft Windows or macOS), along with a suitable AC adapter.
- Please note: DVI output is not supported. If needed, please bring a VGA or HDMI adapter.
- Disable screensavers and energy-saving settings in advance.

- **Using Onsite PC**

- A PC will be available in each Session Room, equipped with Microsoft Windows and PowerPoint.
- If using the onsite PC, please save your presentation on a USB flash drive and upload it to the session PC at least 15 minutes prior to your session beginning.

- **Presentation Time Allocation**

- **Plenary Lecture:** 45 minutes presentation + 5 minutes Q&A (Total: 50 minutes)
- **Keynote Speech:** 35 minutes presentation + 5 minutes Q&A (Total: 40 minutes)
- **Invited Talk:** 17 minutes presentation + 3 minutes Q&A (Total: 20 minutes)
- **Regular Talk:** 12 minutes presentation + 3 minutes Q&A (Total: 15 minutes)

Poster Presentation Guidelines

- **Set-up Time**

Posters should be displayed on **Monday, October 27**, preferably by **13:30**.

- **Presentation Time**

Presenters must be available near their posters during the **Poster Session: 17:00–18:30**.

- **Take-down**

Posters must be removed by the presenter after the session concludes.

- **Poster Board Dimensions**

- Each poster board measures **2.1 m (height) × 0.9 m (width)**.
- Posters are recommended to be in **A0 size (841 mm × 1189 mm), portrait orientation**.
- Tapes will be provided for mounting posters.

TACT 2025 Student Oral and Poster Presentation Competition Information

Eligibility

Applicants must be the submitting author, currently hold student status during the competition period, and be listed as one of the authors of the submitted paper.

Registration

- Those wishing to enter the competition must complete their submission on the official conference website before the announced deadline. Submissions not received within the deadline will be ineligible.
- Each student and topic can only select either the oral or the poster competition, not both.
- Oral Presentation Competition — Select "Oral Presentation Competition" during submission and upload a one-page abstract and a two-page extended abstract in the required format.
- Poster Presentation Competition — Select "Poster Presentation Competition" during submission and upload a one-page abstract and a two-page extended abstract in the required format.
- Incomplete submissions or missing uploads will result in disqualification.

Review Process

- Oral Presentation Competition: Submissions will be reviewed by a committee organized by the TACT Academic Committee. Finalists will be announced on the conference website by Sunday, August 31, 2025. To encourage student participation in the presentation competition, submissions not selected as finalists for the Oral Presentation Competition may still be presented orally and, upon review by the Academic Committee, may be given the option to participate in the Poster Presentation Competition finals.
- Poster Presentation Competition: Submissions will be reviewed by the TACT Academic Committee. Finalists will be announced on the conference website by Monday, September 15, 2025. Submissions not selected as finalists can still be presented during the poster session for the Best Poster Popularity Awards.

Final Evaluation

- Oral Presentation: Evaluated based on originality (20%), presentation skills (20%), analytical ability (20%), significance of findings (20%), and conclusion including Q&A (20%). Rankings are determined by total score. In the case of a tie, the originality and significance of the findings scores will be used as tiebreakers.

- Poster Presentation: Evaluated based on on-site Q&A (30%), originality (20%), content quality (20%), research outcome (20%), and poster design (10%). Rankings are determined by total score. Ties will be broken using originality and research outcome scores.

Presentation Guidelines

- Oral Presentation Finals will be held on Tuesday, October 28, 2025. Each presentation is limited to 15 minutes (including 3 minutes for Q&A). Participants must prepare and upload the slides before the beginning of the session and give their oral presentation on-site and on time to be eligible for awards.
- Poster Presentation Finals will be held on Monday, October 27, 2025. Posters should be 90 cm (W) × 120 cm (H), portrait orientation. Participants must present their posters on-site and on time to be eligible for awards.

Awards

- Oral Presentation Competition: The Awards committee will select the top three presenters to receive the TACT 2025 Gold, Silver, and Bronze Awards, with prize money of USD \$500, \$400, and \$300 respectively. Several Merit Awards will also be presented with certificates, and Finalist Certificates will be awarded to other outstanding finalists.
- Poster Presentation Competition: Several Best Poster Awards will be selected from fields A–G, with each recipient receiving USD \$150 and an Honored Certificate. In addition, several Poster Presentation Merit Awards and Best Poster Popularity Awards will also be presented.

Contact Persons

- For inquiries regarding the Oral Presentation Competition, please contact Prof. Bo-Shiuan Li, National Sun Yat-sen University. (bsli@mail.nsysu.edu.tw)
- For inquiries regarding the Poster Presentation Competition, please contact Prof. Fan-Bean Wu, National United University. (fbwu@nuu.edu.tw)
- For other submission-related inquiries, please contact the TACT 2025 Secretariat at: 2025tact@gmail.com or tact.secretary@gmail.com.

TACT 2025 Program Overview

Date Time	Oct. 25, 2025 (Sat)	Oct. 26, 2025 (Sun)	Oct. 27, 2025 (Mon)	Oct. 28, 2025 (Tue)	Oct. 29, 2025 (Wed)
09:00 ~ 12:00		<ul style="list-style-type: none"> Registration Short Course (I)-2 	<ul style="list-style-type: none"> Registration Keynote Session (II) Keynote Session (III) Tutorial Lecture Oral Session (II) Exhibition 	<ul style="list-style-type: none"> Registration Plenary Session (II) Keynote Session (IV) Oral Session (V) Exhibition 	<ul style="list-style-type: none"> Registration Keynote Session (V) Keynote Session (VI) Exhibition Closing
12:00 ~ 13:30		<ul style="list-style-type: none"> Lunch 	<ul style="list-style-type: none"> Lunch 	<ul style="list-style-type: none"> Lunch TACT Member Meeting 	<ul style="list-style-type: none"> Lunch
13:30 ~ 18:00	<ul style="list-style-type: none"> Short Course (I)-1 (14:00~17:00) 	<ul style="list-style-type: none"> Registration Opening Plenary Session (I) Keynote Session (I) Oral Session (I) Exhibition 	<ul style="list-style-type: none"> Registration Oral Session (III) Oral Session (IV) Poster Session (17:00~18:30) Exhibition 	<ul style="list-style-type: none"> Registration Short Course (II)-online Oral Session (VI) Exhibition 	<ul style="list-style-type: none"> Conference Tour (12:30~20:30)
18:00 ~ 20:30		<ul style="list-style-type: none"> Welcome Reception 		<ul style="list-style-type: none"> Banquet* 	

*Banquet Hall: THE HOWARD PLAZA HOTEL TAIPEI (#160, Ren-Ai Rd., Sec.3, Taipei,)

October 25, 2025 (Sat)	
14:00~17:00	Short Course (R301) (I)-1 (Coating Materials Design)---Prof. Jochen Schneider

October 26, 2025 (Sun)	
09:00~17:00	Registration
09:00~12:00	Short Course (R204) (I)-2 (Coating Materials Design)---Prof. Jochen Schneider
12:00~13:00	Lunch
13:30~18:00	Company Company Exhibition
13:30~14:00	Opening
14:00~14:50	Plenary Session (I): Prof. Jyh-Ming Ting
14:50~15:30	Keynote Session (I): Prof. Ying-Hao Eddie Chu
15:30~15:50	Break
15:50~17:30	Oral Session (I)
18:00~20:00	Welcome Reception

October 27, 2025 (Mon)	
09:00~18:00	Registration
09:00~18:00	Company Exhibition
09:00~09:40	Keynote Session (II): Prof. Masaru Hori
09:40~10:20	Keynote Session (III): Prof. Paul Heinz Mayrhofer
10:20~10:40	Break
10:40~12:00	Tutorial Lecture (R204) --- Prof. Ivan Petrov
10:40~12:00	Oral Session (II)
12:00~13:30	Lunch
13:30~15:10	Oral Session (III)
15:10~15:30	Break
15:30~16:30	Oral Session (IV)

October 27, 2025 (Mon)	
17:00~18:30	Poster Session (Student Activity Center)

October 28, 2025 (Tue)		
09:00~18:00	Registration	
09:00~18:00	Company Exhibition	
09:00~09:50	Plenary Session (II): Prof. Lars G. Hultman	
09:50~10:30	Keynote Session (IV): Prof. Jochen Schneider	
10:30~10:50	Break	
10:50~12:00	Oral Session (V)	
12:00~13:30	Lunch	12:00~13:00 TACT Member Meeting (台灣鍍膜科技協會會員大會)
13:30~15:40	Oral Session (VI)	14:00~16:00 Short Course (II)-online (X-Ray Photoelectron Spectroscopy)---Prof. Grzegorz Greczynski
15:40~16:00	Break	
16:00~17:40	Oral Session (VII)	
18:00~20:30	Banquet	

October 29, 2025 (Wed)	
09:00~11:30	Registration
09:00~11:30	Company Exhibition
09:00~09:40	Keynote Session (V): Prof. Sven Ulrich
09:40~10:20	Keynote Session (VI): Prof. Madoka Takai
10:20~10:40	Break
10:40	Closing, Student Awards, and Raffle Draw
12:30~20:30	Conference tour

TACT 2025 Oral Program (arranged by Day)

Plenary / Keynote	
October 26, Sunday	Room: The Lecture Hall. Chair(s): Jinn P. Chu / Jia-Hong Huang
14:00~14:50	H-I-131 Powering a Greener Future: MEA-based Green Hydrogen Production and Energy-Saving Hydrogen Production via Waste-to-Value Conversion Jyh-Ming Ting* Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
14:50~15:30	H-I-417 High-Entropy Ferroelectric/Piezoelectric Epitaxial Films Ying-Hao Chu* Department of Materials Science & Engineering, National Tsing Hua University, Hsinchu, Taiwan Department of Materials Science & Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan
October 27, Monday	Room: The Lecture Hall. Chair(s): Jenq-Gong Duh / Fu-Hsing Lu
09:00~09:40	H-I-82 Exploring Plasma Science through Thin Film Technology and Manufacturing Innovation Masaru Hori* Nagoya University, Japan
09:40~10:20	H-I-166 Materials science-based guidelines to develop robust hard coatings Paul H. Mayrhofer* Institute of Materials Science and Technology, TU Wien, Vienna, Austria
October 28, Tuesday	Room: The Lecture Hall. Chair(s): Jyh-Wei Lee / Fan-Yi Ouyang
09:00~09:50	H-I-37 Discovery of Goldene Comprising Single-atom Layer Gold; Prospects for Novel Noble Metallenes Hultman* Department of Physics, Chemistry and Biology (IFM), Linköping University, Linköping, Sweden Center for Plasma and Thin Film Technology, Ming Chi University of Technology, New Taipei City, Taiwan
09:50~10:30	H-I-145 Coating Materials Design for Harsh Environments – Are Protective Coatings Predictable? Jochen M. Schneider* Materials Chemistry, RWTH Aachen University
October 29, Wednesday	Room: The Lecture Hall. Chair(s): Yin-Yu Chang / Ren-Jei Chung
09:00~09:40	H-I-192 Carbon-based nanocomposites Sven Ulrich**, Michael Stueber Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany
09:40~10:20	H-I-177 Surface modification for functions of biomolecule recognition for biomedical devices Madoka Takai* Department of Bioengineering, School of Engineering, The University of Tokyo, Tokyo, Japan

Symposium A. Coatings for Sustainable Energy	
October 26, Sunday	Room: R304. Chair(s): Chen-Hao Wang
15:50-16:10	A-I-67 Electrochemical Reduction of Furfural on Copper Electrode Enhanced by Metal–Organic Framework Overlayer Wen-Yueh Yu ^{†*} , Yu-Shuo Lee Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan, ROC
16:10-16:30	A-I-137 Direct bonding between Single Atom Ag, PF3T nanocluster and TiO ₂ leads the Ultra-stable Visible-Light-Driven Photocatalytic H ₂ Production Tsan-Yao Chen ^{1†} , Fan-Gang Tseng ¹ , Jyh-Pin Chou ² ¹ Department of Engineering and System Science, National Tsing Hua University, Hsinchu 30013, Taiwan ² Graduate School of Advanced Technology, National Taiwan University, Taipei 106319, Taiwan
16:30-16:45	A-O-262 Green Electrode Engineering for Vanadium Redox Flow Batteries using Atmospheric Pressure Plasma Jet-Deposited Bimetallic Co–Ni Oxide Catalysts Ahmad Nur Riza ^{1,2†} , Song-Yu Chen ³ , Yun-Chu Chen ² , Mei-Yu Chen ² , Ni Putu Devi Kristina ² , Yu-Lin Kuo ^{1,4*} , Ting-Yu Liu ^{2,5*} ¹ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan ² Department of Materials Engineering, Ming Chi University of Technology, New Taipei 243303, Taiwan (R.O.C) ³ Department of Mechanical Engineering, Yuan Ze University, 135 Yuan-Tung Road, Chung-Li 32003, Taiwan ⁴ Advanced Manufacturing Research Center, National Taiwan University of Science and Technology, Taiwan ⁵ Research Center for Intelligent Medical Devices, Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei 243303, Taiwan (R.O.C)
16:45-17:00	A-O-301 Development of cost-efficient and impurity-free V ^{3,5+} electrolytic material for all vanadium redox flow battery Hailegnaw Gizaw Workie ^{1†} , Aknachew Mebreku Demeku ¹ , Daniel Manaye Kabtamu ¹ , Anteneh Wodaje Bayeh ¹ , Zih-Jhong Huang ¹ , Chen-Hao Wang ¹ ¹ Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei 106335, Taiwan
17:00-17:20	A-I-509 Modification of fuel electrode for efficient co-electrolysis process Piotr Jasinski ^{1†*} , Patryk Błaszczak ¹ , Agata Ducka ² , Beata Bochentyn ² , Imran Asghar ³ , Sea-Fue Wang ⁴ ¹ Advanced Materials Center, Faculty of Electronics, Telecommunications and Informatics, Gdansk University of Technology, Gdańsk, Poland ² Advanced Materials Center, Institute of Nanotechnology and Materials Engineering, Faculty of Applied Physics and Mathematics, Gdansk University of Technology Gdańsk, Poland ³ Faculty of Engineering and Natural Sciences, Tampere University, Tampere, Finland ⁴ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan
October 27, Monday	Room: R304. Chair(s): Chih-Liang Wang
13:30-13:50	A-I-401 Advancing Hybrid Sn–Pb Perovskite Solar Cells via Interfacial Engineering, Crystal Growth Control, and Transport Layer Optimization Chieh-Ting Lin [*] Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan
13:50-14:10	A-I-52 Tailoring the Lithium Deposition on Cu Substrate by a Functionalized-polysiloxane Layer Fu-Ming Wang [*] Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei, Taiwan, ROC
14:10-14:25	A-O-81 Facile fabrication of Multilayer porous catalytic electrode using Plasma Electrolytic oxidation Yu-Yang Chen ^{1†} , Chun-Ming Lu ² , Wing Kiu Yeung ^{1*} ¹ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, 10608, Taiwan

14:25-14:40	A-O-129 Biochar-derived hard carbon anode coated with a nitrogen-doped carbon layer for high-performance lithium-ion batteries. H. K. Tseng ^{1†} , L. Y. Hsiao ¹ , W. L. Wang ² , T. Y. Lin ^{1*} ¹ Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan. ² Agri-Industrial Systems Technology Division, ITRI Central Region Campus
14:40-14:55	A-O-75 Perovskite Solar Cells Fabrication via Reuse of Recovered Lead Iodide Jin-Wei Chang ^{1†} , Yu-Kai Chen ¹ , Chieh-Ting Lin ² , Fan-Wei Liu ^{3*} ¹ Master Program in Semiconductor and Green Technology, Academy of Circular Economy, National Chung Hsing University, Taiwan ² Department of Chemical Engineering, National Chung Hsing University, Taichung City, Taiwan ³ Graduate Program in Semiconductor and Green Technology, Academy of Circular Economy, National Chung Hsing University, Taiwan
14:55-15:10	A-O-80 Investigation of the Degradation Behavior of AlGaIn LEDs under Salt Spray Conditions Using Electrical and Material Characterization, with Novel Insights for Protective Circuit Design Shao-Ruei Yang ^{1†} , Wei-Cheng Chen ¹ , En-Ting He ¹ , Yu-Tung Chen ¹ , Yung-Lin Chiu ¹ , Yan-Kai Su ¹ , Wei-Jung Lin ¹ , Chia-Feng Lin ² , Yung-Hui Li ³ , Hsiang Chen ^{1*} , Jung Han ⁴ ¹ Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, 54561, Nantou, Taiwan ² Department of Materials Science and Engineering, National Chung Hsing University, 40227, Taichung, Taiwan ³ AI Research Center, Hon Hai Research Institute, 11494, Taipei, Taiwan. ⁴ Department of Electrical Engineering, Yale University, CT 06511, New Haven, USA

October 27, Monday	Room: R304. Chair(s): Tzu-Ying Lin
15:30-15:50	A-I-121 Characterizing the Microstructure of Electrodeposited Mg Layers for Anode-Free Rechargeable Mg Batteries Ying-Chen Wu ¹ , Yu-Chen Chen ¹ , Chih-Wei Sung ^{1,2} , Yu-Shan Huang ¹ , Peng-Wei Chu ^{1,2†*} ¹ Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan ² Center for Nanotechnology, Materials Science, and Microsystems, National Tsing Hua University, Hsinchu, Taiwan
15:50-16:10	A-I-353 Engineering Heterogeneous Electrode Coating to Enhance Proton Exchange Membrane Water Electrolyzer Performance Patcharawat Charoen-amornkitt ^{1†*} , Peerapat Orncompa ¹ , Takahiro Suzuki ² , Shohji Tsushima ² ¹ Electrochemical Energy Storage and Conversion Laboratory Department of Mechanical Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi, 126 Pracha Uthit Rd., Bang Mod, Thung Khru, Bangkok 10140, Thailand ² Department of Mechanical Engineering, Graduate School of Engineering, Osaka University, Suita, Osaka 565-0871, Japan
16:10-16:30	A-I-506 Oxidation of Silver and Rhodium Surfaces Daniel R. Killelea ^{†*} Department of Chemistry, Loyola University Chicago, Chicago, IL USA
16:30-16:45	A-O-245 Defect-engineered copper-based materials for electrocatalytic nitrate reduction Ting-Chun Hung ^{1†} , Jyh-Ming Ting ^{1*} ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
16:45-17:00	A-O-303 Non-Precious Metal Alloy/Oxide Heterostructure Electrocatalysts for HER in Anion Exchange Membrane Water Electrolyzer Jian-An Wu [†] , Thi Y Phung Nguyen [*] , Thi Xuyen Nguyen [*] , Jyh-Ming Ting [*] Department of Materials Science and Engineering, National Cheng Kung University, Tainan 70101, Taiwan

October 28 Tuesday	Room: R304. Chair(s): Wei-Ren Liu
10:50-11:10	A-I-199 Oxide-Based Quasi-Solid-Electrolyte Layers for High-Energy-Density Lithium Batteries Tzu-Yu Kuo, Cheng-Chia Chen, Jagabandhu Patra, Jeng-Kuei Chang ^{†*} Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan
11:10-11:25	A-O-9 Facile Hydrothermal-Sintering Synthesis of $\text{Fe}_x\text{Co}_{3-x}\text{V}_3\text{O}_8$ for High-Efficiency Lithium Storage S. K. Babu ^{1†} , P.-J. Wu ¹ , and W.-R. Liu ^{1,2*} ¹ Department of Chemical Engineering, Chung Yuan Christian University, Taoyuan City, Taiwan, R.O.C. ² Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand.
11:25-11:40	A-O-172 Enhancing Vanadium Redox Flow Battery Performance with Molybdenum-Doped Nickel Cobalt Oxide Modified Graphite Felt Electrodes Zih-Jhong Huang [†] , Chen-Hao Wang [*] Department of Materials Science and Engineering, National Taiwan University of Science and Technology
11:40-11:55	A-O-381 Hydrothermally Synthesized Spinel CoCr_2O_4 for Photodegradation of Organic Dyes YuHao Chen ^{1†} , Tomoyuki Kurioka ^{1,2} , Chun-Yi Chen ^{1,2,*} , Yung-Jung Hsu ^{1,2,3} , Satoshi Okamoto ^{1,2} , Tso-Fu Mark Chang ^{1,2} , Masato Sone ^{1,2} ¹ Materials and Structures Laboratory, Institute of Integrated Research, Institute of Science Tokyo, Kanagawa 226-8501, Japan ² Sumitomo Chemical Next-Generation Eco-Friendly Devices Collaborative Research Cluster, Tokyo Institute of Technology, Kanagawa 226-8501, Japan ³ Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

October 28, Tuesday	Room: R304. Chair(s): Hsin-Chih Huang / Shao-Ju Shih
13:30-13:50	A-I-174 Soft Sputtering of Multi-Component TCO Top Electrodes for Semi-Transparent Perovskite Photovoltaics in Smart Windows and Electric Vehicles Han-Ki Kim ^{1*} ¹ School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do 16419, South Korea
13:50-14:10	A-I-40 Large-Scale 2D Transition Metal Dichalcogenides-based thin film heterostructures for Photoelectrochemical water splitting Heng-Jui Liu ^{1†} , Chih-hung Wu ¹ , Ko Tung Ching ¹ , Yu-Hao Tu ² , Chen-Hao Yeh ³ ¹ Department of Materials Science and Engineering, National Chung Hsing University, Taichung 402202, Taiwan ² College of Semiconductor Research, National Tsing Hua University, Hsinchu 300044, Taiwan ³ Department of Materials Science and Engineering, Feng Chia University, Taichung 407012, Taiwan
14:10-14:30	A-I-136 Mapping Electrochemical and Structural Properties of 2D Materials He-Yun Du ^{1,2,3†*} ¹ Department of Chemical Engineering, Ming Chi University of Technology, New Taipei City, Taiwan ² Battery Research Center of Green Energy, Ming Chi University of Technology, New Taipei City, Taiwan. ³ R&D Center of Biochemical Engineering Technology, Ming Chi University of Technology, New Taipei City, Taiwan.
14:30-14:50	A-I-135 Methods to improve the stability and catalytic activity of biogas-fed Direct Internal Reforming Solid Oxide Fuel Cells: the role of catalytic layers and exsolved metallic nanoparticles B.Bochentyn ^{1†*} , K.Kujawska ¹ , M.Dominow ¹ , A.Ducka ¹ , J.Zdankiewicz ¹ , A.Witkowska ¹ , Sz.Winczewski ¹ , J.Karczewski ¹ , S.-F.Wang ² , F.d'Acapito ³ , C.Ghica ⁴ ¹ Faculty of Applied Physics and Mathematics, Gdansk University of Technology, ul. Narutowicza 11/12, 80-233 Gdańsk, Poland ² Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taiwan ³ CNR-IOM-OGG c/o ESRF-The European Synchrotron, 71 Avenue des Martyrs, 38000 Grenoble, France ⁴ National Institute of Materials Physics, Atomistilor 405A, 077125 Magurele, Romania

14:50-15:05	<p>A-O-296 Enhancing thermoelectric properties of Sn-doped β-Zn₄Sb₃ Films by Ion Beam-Assisted Deposition Bo-Chen Tang^{1,†}, Cheng-Lung Chen², Sheng-Chi Chen^{1,3,*}</p> <p>¹Department of Materials Engineering and Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei City, Taiwan ²Department of Physics, National Chung Hsing University, Taichung, Taiwan ³College of Engineering and Center for Green Technology, Chang Gung University, Taoyuan, Taiwan</p>
15:05-15:20	<p>A-O-297 Toward High-Quality ZnSb Thermoelectric Thin Films via HiPIMS: Role of Duty Cycle on Crystallization and Stability Min-Chen Chuang^{1,2,†}, Cheng-Lung Chen^{3,4}, Ludwig Enzberger⁵, Silke Bühler-Paschen⁶, Paul Heinz Mayrhofer⁵, Sheng-Chi Chen^{2,7*}</p> <p>¹International Ph.D. Program in Plasma and Thin Film Technology, Ming Chi University of Technology, New Taipei City 243, Taiwan ²Department of Materials Engineering and Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei City 243, Taiwan ³Department of Physics, National Chung Hsing University, Taichung City 40227, Taiwan ⁴Institute of Nanoscience, National Chung Hsing University, Taichung City, 40227, Taiwan ⁵Institute of Materials Science and Technology, Vienna University of Technology, Vienna 1040, Austria ⁶Institute of Solid State Physics, Vienna University of Technology, Vienna 1040, Austria ⁷College of Engineering and Center for Green Technology, Chang Gung University, Taoyuan 333, Taiwan</p>
15:20-15:35	<p>A-O-183 CsPbI₃ Thin Films Prepared by Co-Sputtering and Post-Annealing for All-Vacuum-Processed Perovskite Solar Cells Yewon Lee^{1,†}, Doha Lim¹, Jun-Hyeok Kang¹ and Han-Ki Kim^{1*}</p> <p>¹School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do 16419, South Korea</p>
15:35-15:50	<p>A-O-5 Study of magnetic field-induced martensite variant reorientation behaviors of the Ni-Mn-Ga particles thin film composites Wan-Ting Chiu^{1,†*}, Pimpet Sratong-On², DongKeun Han³, Masaki Tahara³, Volodymyr Chernenko^{4,5,6}, Senentxu Lanceros-Mendez^{5,6}, Hideki Hosoda³</p> <p>¹School of Materials and Chemical Technology, Institute of Science Tokyo, Tokyo 152-8550, Japan ²Composite Materials and Lightweight Structures, Faculty of Engineering, Thai-Nichi Institute of Technology, Bangkok 10250, Thailand ³Laboratory for Future Interdisciplinary Research of Science and Technology & Materials and Structures Laboratory, Institute of Integrated Research (IIR), Institute of Science Tokyo, Yokohama 226-8501, Japan ⁴University of Basque Country (UPV/EHU), Bilbao, 48080, Spain ⁵BCMaterials, Basque Center on Materials, Applications and Nanostructures, UPV/EHU Science Park, Leioa, 48940, Spain ⁶Ikerbasque, Basque Foundation for Science, Bilbao, 48009, Spain</p>

October 28, Tuesday	Room: R304. Chair(s): He-Yun Du / Heng-Jui Liu
16:00-16:20	<p>A-I-358 Heterostructured Catalysts Derived from Layered Double Hydroxides for Enhanced Oxygen Evolution Reaction Activity Yen-Ting Yang¹, Tzu-Wei Hsieh¹, Tsung-Han Lee¹, Hsin-Chih Huang^{1,†*}</p> <p>¹Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</p>
16:20-16:40	<p>A-I-27 Mesoporous SiO₂ and PMMA composite thick films for radiative cooling applications Dwi Fortuna Anjusa Putra and Shao-Ju Shih^{†*}</p> <p>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</p>
16:40-16:55	<p>A-O-295 Preparation and characterization of crystal Si film on Si (001) substrate through chemical transport in high-pressure and narrow gap hydrogen plasma Hiromasa Ohmi^{†*}, Kantaro Kobayashi, Rurii, Higuchi, Rikuto Enoki, and Hiroaki Kakiuchi</p> <p>Department of Precision Engineering, the University of Osaka, Suita Osaka, Japan</p>

16:55-17:10	A-O-430 Multifunctional Cu ₂ Y ₂ O ₅ Nanofiber@MXene Composite Coated Ni Foam Electrode for sensitive Electrochemical Detection of Tert-Butyl Hydroquinone and Efficient OER Akhila Chappagattil ^{1,2†} , Thilak Sabareesh Malayalam Amarnath ^{1,2} , Subramaniam Sakthinathan ^{1,2*} , Te-Wei chiu ^{1,2*} ¹ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan. ² Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan.
17:10-17:25	A-O-463 Fabrication of Complementary Electrochromic Devices with Predeposited PANI and in-situ Polymerized PEDOT Using UV-Cured Electrolytes Cheng-Lan Lin ^{1,2†} , Ya-Mei Huang ¹ , Li-Kai Lin ¹ ¹ Department of Chemical and Materials Engineering, Tamkang University, New Taipei City, Taiwan ² The Energy and Opto-Electronic Materials Research Center, Tamkang University, New Taipei City, Taiwan
17:25-17:40	A-O-466 Substrate Temperature-Dependent Nanomechanical and Thermoelectric Properties of TiNiSb Thin Films Deposited by DC Magnetron Sputtering Teng-Ping Chu ^{1,2} , Phuoc Huu Le ^{1,2,*†} , Chien-Neng Liao ³ , Jyh-Wei Lee ^{1,2,4,*} ¹ Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei City, Taiwan ² International Ph.D. Program in Plasma and Thin Film Technology, Ming Chi University of Technology, New Taipei City, Taiwan ³ Department of Materials Science and Engineering, National Tsing-Hua University, Hsinchu City, Taiwan ⁴ Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan

Symposium B. Nanostructured and Nanocomposite Coatings

October 26, Sunday	Room: R201. Chair(s): Jin Kawakita / Nguyen Hoang Luong
15:50-16:10	B-I-32 Quenched-produced diamond (Q-dia) films by physical vapor deposition and their applications Tsuyoshi Yoshitake ^{†*} Kyushu University, 6-1 Kasuga, Fukuoka 816-8580, Japan
16:10-16:30	B-I-97 SrVO thin films for opto-electronic applications Gourbilleau Fabrice ^{1†*} , Rouviller Axel ¹ , Ramesh Sundar Pratibha Nalini ¹ , Dufour Christian ¹ , Datti Yanis ² , Talbot Etienne ² , Mezhoud Moussa ³ , Lüders Ulrike ³ , Portier Xavier ¹ ¹ CIMAP, Normandie Université, ENSICAEN, UNICAEN, CNRS, 14050 Caen Cedex 4, France ² GPM UMR 6634, Univ Rouen Normandie, INSA Rouen Normandie, CNRS, Normandie Univ, 76000 Rouen, France ³ CRISMAT, Normandie Université, ENSICAEN, UNICAEN, CNRS, 14050 Caen Cedex 4, France
16:30-16:50	B-I-48 Raising Photocatalytic activity using metal/semiconductor oxide nanocomposites for the photodegradation of organic pollutants Niloy Paul ¹ , Akash Sawate ² , Tetsuro Katayama ² , Akihiro Furube ² , Pankaj Koinkar ^{2,3,†,*} ¹ Graduate School of Sciences and Technology for Innovation, Tokushima University, 2-1 Minamijosanjima-cho, Tokushima 770 8506, Japan ² Institute of Post-LED Photonics, Tokushima University, 2-1 Minamijosanjima-cho, Tokushima 770 8506, Japan ³ Graduate School of Technology, Industrial and Social Science, Tokushima University, Minamijosanjima Cho, Tokushima 770 8506, Japan
16:50-17:05	B-O-30 Enhanced Thermal Stability and Oxidation Resistance via Triple-Sublayer Multilayer Coatings Van-Tien Tang ^{1†} , Yin-Yu Chang ^{1*} , Min-Xin Shi ¹ , Ke-Huan Wu ¹ ¹ Department of Mechanical and Computer-Aided Engineering, National Formosa University, Taiwan
17:05-17:20	B-O-89 High-sensitivity reflectometric interference spectroscopy of glucose label-free detection Chung-Yu Yu [†] , Zhi-Qian Luo, Chen-Kuei Chung [*] Department of Mechanical Engineering, National Cheng Kung University, Tainan 701, Taiwan

October 27, Monday	Room: R201. Chair(s): Prof. Chen-Kuei Chung / Akihiko Fujiwara
10:40-11:00	B-I-270 Enhanced Moisture Detection Using Nanocoated Micro-Galvanic Arrays with Submicron Gaps Jin Kawakita ^{†*} National Institute for Materials Science, Tsukuba, Japan
11:00-11:20	B-I-106 Tailoring magnetic properties of FePt thin films through annealing conditions Nguyen Hoang Luong ^{1†*} , Nguyen Thi Thanh Van ² , Nguyen Minh Hieu ¹ , Tran Thi Hong ¹ , Phi Thi Huong ¹ , Nguyen Hoang Nam ¹ ¹ University of Science, Vietnam National University, Hanoi, Vietnam ² Vietnam Academy of Cryptography Techniques, Hanoi, Vietnam
11:20-11:35	B-O-90 Enhanced Corrosion Resistance of Mg-Based Alloys Using Quenched Diamond (Q-dia) Coatings. Ahmed Hamed Oraby ^{1,3†*} , Hsin-Chih Lin ² , Tsuyoshi Yoshitake ¹ , Abdelrahman Zkria ^{1,3*} ¹ Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Kasuga, Fukuoka 816-8580, Japan. ² Department of Materials Science and Engineering, National Taiwan University, Taipei 10617, Taiwan. ³ Department of Physics, Faculty of Science, Aswan University, Aswan 81528, Egypt.
11:35-11:50	B-O-138 Synthesis and evaluation of g-C ₃ N ₄ /BiOI nanocomposite for organic dye photodecomposition by simple precipitation method Yasuyuki Maeda ^{1†} , Akihiro Furube ² , Pankaj Koinkar ^{2,3*} ¹ Graduate School of Science and Technology for Innovation, Tokushima University, Tokushima University, 2-1 Minamijosanjima Cho, Tokushima 770-8506, Japan ² Institute of Post-LED Photonics, Graduate School of Science and Technology for Innovation, Tokushima University, Tokushima University, 2-1 Minamijosanjima Cho, Tokushima 770-8506, Japan ³ Graduate School of Technology, Industrial and Social Sciences, Tokushima University, Tokushima University, 2-1 Minamijosanjima Cho, Tokushima 770-8506, Japan
11:50-12:05	B-O-156 A high regularity porous SERS substrate prepared by two-step mild and hard anodization for sorbic acid detection Chin-An Ku [†] , Chen-Kuei Chung [*] Department of Mechanical Engineering, National Cheng Kung University, Tainan 701, Taiwan

October 27, Monday	Room: R201. Chair(s): Hiroshi Masumoto / Bui Nguyen Quoc Trinh
13:50-14:10	B-I-179 Advances in the Fabrication of Nanoporous Anodic Aluminum Oxide and Its Applications to Sensors Chen-Kuei Chung ^{†*} Department of Mechanical Engineering, National Cheng Kung University, Tainan 701, Taiwan
14:10-14:25	B-O-170 High-Performance SLIPS Based on Metallic Nanotube Arrays for Anti-Icing Applications Helmi Son Haji ^{1†} , Pakman Yiu ^{2,3} , Jinn P. Chu ^{1*} ¹ Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan ² Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan. ³ Center for Plasma and Thin Film Technologies (CPTFT), Ming Chi University of Technology, New Taipei City, Taiwan.
14:25-14:40	B-O-250 Nanostructured ITO thin films for dynamic windows Nutpaphat Jarulertwathana, Jerome K. Hyun ^{1†*} ¹ Department of Chemistry and Nanoscience, Ewha Womans University, Seoul, South Korea
14:40-14:55	B-O-257 Optical generation of spin current in two-dimensional metallic TMDCs Katsunori Wakabayashi ^{1†*} , Tomoaki Kameda ¹ , Souren Adhikary ¹ ¹ Department of Nanotechnology for Sustainable Energy, Kwansai Gakuin University, Sanda, Japan
14:55-15:10	B-O-431 Synergistic Visible-Light Driven CeS ₂ Nanostructures coated on Nickel foam for Dual-Functional Supercapacitor and Dye Degradation Applications. Joel Skaria Joseph ^{1†} , Vijayalakshmi Pandurangan ^{1,2} , Subramanian Sakthinathan ^{1*} , Te-Wei Chiu ^{1*}

	¹ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan.
	² Department of Chemistry, Tamil Nadu Open University, Saidapet, Chennai, 600 015, Tamil Nadu, India.

October 27, Monday	Room: R201. Chair(s): Tae-Wook Kim / Fan-Yi Ouyang
15:30-15:50	B-I-361 Full Solution-processed Metal Oxide Semiconductor devices: Issues and Perspectives Akihiko Fujiwara ^{1†*} ¹ School of Engineering, Kwansai Gakuin University, Sanda, Japan
15:50-16:05	B-O-391 Nanotwinned Silver Thin Films on Silicon Carbide: Bias-Controlled Growth and Performance for High-Power Applications Ding-Peng Lin [†] , Ping-Chun Kuo, Fan-Yi Ouyang [*] ¹ Department of Engineering and System Science, National Tsing Hua University, Taiwan (ROC)

October 28, Tuesday	Room: R201. Chair(s): Pham Duc Thang / Yoshitada Morikawa
10:50-11:10	B-I-383 Effect of Low-energy Ion Irradiation on GdBa ₂ Cu ₃ O _y Superconducting Thin Films Toshinori Ozaki ^{1†} , Hiroyuki Okazaki ^{2*} , Hiroshi Koshikawa ^{2*} , Shunya Yamamoto ^{2*} , Tetsuya Yamaki ^{2*} , Tetsuro Sueyoshi ^{3*} , Hitoshi Sakane ^{4*} ¹ Kwansai Gakuin University, Sanda, Japan ² Takasaki Institute for Advanced Quantum Science, National Institutes for Quantum Science and Technology (QST), Takasaki, Japan ³ Kyushu Sangyo University, Fukuoka, Japan ⁴ SHI-ATEX Co., Ltd., Saijo, Japan
11:10-11:30	B-I-410 Self-assembled monolayers for high-reliability Ag interconnects: A new approach to suppress electrochemical migration Fan-Yi Ouyang ^{†*} , Hung-Lin Chen, Chien-Cheng Chiang Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan
11:30-11:45	B-O-181 Scalable Fabrication of Rhombic Nanotube Arrays as High-Sensitivity SERS Substrate Man-Yun Hsu ^{1†} , Ting-Hao Chang ¹ , Alfreda Krisna Altama ¹ , Jun-Ting Wang ¹ , Pakman Yiu ² and Jinn P. Chu ^{1*} ¹ Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan. ² Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan

October 28, Tuesday	Room: R201. Chair(s): Tsuyoshi Yoshitake /Gourbilleau Fabrice
13:30-13:45	B-O-176 Understanding the Sensing Mechanism of a ZnMoO ₄ integrated on GO Nanocomposite Towards electrochemical detection of Nitrofurantoin in environmental and biological matrices Amulya Garadi ^{1†} , Ren-Jei Chung ^{1*} ¹ Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei, Taiwan
13:45-14:00	B-O-228 Tunable Nanostructured Stainless-Steel Coatings for High-Performance Oil/Water Separation Membranes Fanhua Kong ^{1†} , Yi-Jui Yeh ^{2*} , Wei-Hung Chiang ^{1*} , Kuo-Lun Tung ^{2*} , Jinn P Chu ^{1*} ¹ National Taiwan university of science and technology, Taipei, Taiwan ² National Taiwan university, Taipei, Taiwan
14:00-14:20	B-I-272 Novel Phenomena in Magnetic Metal Nanogranules-Insulating Ceramics Nanocomposite Thin Films Hiroshi Masumoto ^{†*} Frontier Research Institute for Interdisciplinary Sciences (FRIS), Tohoku University, Sendai, Japan
14:20-14:40	B-I-387 Co-Doping CuO-Based Thin Films: Simulation and Experiment Correlation Bui Nguyen Quoc Trinh ^{1†*} , Nguyen Tien Tao ¹ , Pham Duc Anh ¹ , Phan Quoc Minh ¹

	<p>¹Vietnam National University, Hanoi, Vietnam Japan University, Semiconductor Chip Technology Program, Luu Huu Phuoc street, Nam Tu Liem, Hanoi, Vietnam</p>
14:40-15:00	<p>B-I-344 Energy Harvesting: Piezoelectric Materials for Sustainable Environmental Monitoring and Energy Conversion Nguyen Thi Nghi Nhan^{†*} Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</p>
15:00-15:15	<p>B-O-282 Flexible Sens Substrate Based on Silver Nanoparticles /Polyurethane Nanofibers for the Ultrasensitive Detection of Organic Pollutants Riju Suyesh.S^{1†}, Nazar Riswana Barveen², Petchi Raman Mariappan¹, Chih-Yu Kuo^{1,3,*}, Yu-Wei Cheng^{2,4,*} ¹Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei 10608, Taiwan ²Department of Chemical Engineering, Ming Chi University of Technology, New Taipei City 243303, Taiwan ³High-value Biomaterials Research and Commercialization Center, National Taipei University of Technology, Taipei 10608, Taiwan ⁴R&D Center of Biochemical Engineering Technology, Ming Chi University of Technology, New Taipei City 243303, Taiwan</p>
15:15-15:30	<p>B-O-260 Non-Hermitian Skin Effects in Two-dimensional Photonic Crystals Huyen Thanh Phan^{1†}, Katsunori Wakabayashi^{1*} ¹Department of Nanotechnology for Sustainable Energy, Graduate School of Science and Technology, Kwansei Gakuin University, Japan.</p>
15:30-15:45	<p>B-O-429 Low-Temperature Supercritical Nitrogen Passivation for Surface Trap Suppression and Improved Performance of Recessed-Gate AlGaIn/GaN MIS-HEMTs An-Chen Liu^{1†}, Hsin-Chu Chen^{2*}, Tsung-Sheng Kao, and Hao-Chung Kuo^{1,4*} ¹Department of Photonics and Institute of Electro-Optical Engineering, National Yang Ming Chiao Tung University, Hsinchu 30010, Taiwan ²Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Zhudong 310401, Taiwan ³Institute of Advanced Semiconductor Packaging and Testing, National Sun Yat-sen University, Kaohsiung 804201, Taiwan ⁴Semiconductor Research Center, Hon Hai Research Institute, Taipei 114699, Taiwan</p>

October 28, Tuesday	Room: R201. Chair(s): Toshinori Ozaki / Thi Nghi Nhan Nguyen
16:00-16:20	<p>B-I-122 Giant 2D Single-Crystalline Metallic Nanosheets: Synthesis and Assembly Tae-Wook Kim^{1,2†*} ¹Department of Flexible and Printable Electronics, Jeonbuk National University, Jeonju, Republic of Korea ²Department of JBNU-KIST Industry-Academia Convergence Research, Jeonbuk National University, Jeonju, Republic of Korea</p>
16:20-16:40	<p>B-I-475 Origin for the Colossal Permittivity in doped TiO₂ Van An Dinh^{1†}, Yujiro Hashimoto(co-first author)^{2†}, Koji Kimura^{3,4,5}, Taro Kuwano², Dung Ngoc Dinh^{1,6}, Ryoji Asahi², Koichi Hayashi^{3,4}, Hiroki Taniguchi^{2*}, and Yoshitada Morikawa^{1,7*} ¹The University of Osaka, Osaka, Japan ²Nagoya University, Aichi, Japan ³Nagoya Institute of Technology, Aichi, Japan ⁴Japan Synchrotron Radiation Research Institute (JASRI), SPring-8, Hyogo, Japan ⁵National Institute for Materials Science, Tsukuba, Japan ⁶Graduate University of Science and Technology, Vietnam Academy of Science and Technology, Hanoi, Vietnam ⁷Nanotechnology Program, Faculty of Advanced Technology and Engineering, Vietnam Japan University, Vietnam National University, Hanoi, Hanoi, Vietnam.</p>
16:40-16:55	<p>B-O-435 Phosphorus Doped Graphene CuCoO₂ Nanocomposites Coated Multifunctional Electrodes for High-Performance Supercapacitors and Ultrasensitive 4-Nitrophenol Detection Sivaramkrishnan Vinothini¹, Joel Skaria Joseph¹, Arjunan Karthi Keyan¹, Aishwarya Naik^{1†}, Subramanian Sakthinathan^{1*}, Te-Wei Chiu^{1*}</p>

	¹ Department of Materials and Mineral Resources, Engineering, National Taipei University of Technology, Taiwan.
16:55-17:10	B-O-423 Comparative Study of SiO ₂ Thin Films Deposited by RF Sputtering and HiPIMS: Structural and Optical Properties Jin-Yu Shih ^{1†} , I-Yen Chen ² , Po-Hsun Chu ³ , Fan-Yi Ouyang ^{1*} ¹ Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan. ² Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan. ³ Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan.
17:10-17:25	B-O-436 Interface Modulation of Zn MOF/Mn-Zn Layered Double Hydroxide Heterostructure Thin Films for the Sustainable Electrocatalysis of Hydrogen Evolution Reaction Rajendran Surya [†] , Aishwarya Naik, Lakshmi Muthuramalingam, Subramanian Sakthnathan*, Te-Wei Chiu* Department of Materials and Mineral Resources, Engineering, National Taipei University of Technology, Taipei, Taiwan.

Symposium C. Semiconductor, Optoelectronic and Flexible Device Films	
October 26, Sunday	Room: The Lecture Hall. Chair(s): Ying Hao Chu / Chang-Hyun Kim
15:50-16:10	C-I-42 Beyond 0 and 1: Thin-Film Transistors for Multi-Valued Logic Circuits Chang-Hyun Kim ^{†*} School of Electrical Engineering and Computer Science, University of Ottawa, Canada
16:10-16:30	C-I-59 Controlling effective Schottky barrier height by inserting various ultrathin insulators between aluminum and germanium Yajun Feng ¹ , Genya Kuroeda ¹ , Noboru Shimizu ¹ , Keisuke Yamamoto ^{2,3} , Dong Wang ^{3†*} ¹ Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, 6-1 Kasuga-koen, Kasuga, Fukuoka 816-8580, Japan ² Research and Education Institute for Semiconductors and Informatics, Kumamoto University, 2-39-1 Kurokami, Chuo-ku, Kumamoto 860-8555, Japan ³ Faculty of Engineering Sciences, Kyushu University, 6-1 Kasuga-koen, Kasuga, Fukuoka 816-8580, Japan
16:30-16:45	C-O-139 Current path characterization in channel of graphene FET by EBAC toward high carrier mobility Takatoshi Yamada ^{1†*} , Mitsuhiro Okada ¹ , Yuki Okigawa ¹ ¹ National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan
16:45-17:00	C-O-320 Sensing properties of graphene chemristor with Metal-Isolator-Graphene contacts Ondřej Šik ^{1,2*†} , Petr Sedlák ¹ , Robert Macků ^{1,3} , Nikola Papež ¹ ¹ Department of Physics, Faculty of Electrical Engineering and Communication, Brno University of Technology, Technická 3058/10, 616 00 Brno, Czech Republic ² CEITEC-Central European Institute of Technology, Brno University of Technology, Purkyňova 123, 612 00 Brno, Czech Republic ³ Thermo Fisher Scientific Brno, Vlastimila Pecha 1282/12, 627 00 Brno-Černovice, Czech Republic
17:00-17:15	C-O-372 Nitrogen-Doped ITZO Thin-Film Transistors with Enhanced Electrical Performance and Stability Wei-Sheng Liu ^{1†*} , Guan-Ru Chen ¹ , Chun-Bin Hsu ¹ , Bing-Yu Wu ¹ , Swetha Sathiskumar ² , Balaji G. ¹ ¹ Department of Electrical Engineering, Yuan Ze University, Chung-Li, Taiwan ² Department of Computing, SASTRA Deemed to be University, Thanjavur, India
17:15-17:30	C-O-393 Enhanced Electromigration Resistance in Cu-Doped Nanotwinned Ag Joints for next-generation packaging technologies Cheng-Yi Lai ^{1†} , Peng-Hsiang Hsu ¹ , Fan-Yi Ouyang ^{1*} ¹ National Tsing Hua University, Hsinchu, Taiwan R.O.C.

October 27, Monday	Room: The Lecture Hall. Chair(s): Shih-Nan Hsiao / Chien-Yie Tsay
10:40-11:00	C-I-140 Anisotropic Atomic Layer Etching of HfO ₂ at Room Temperature using Halogen-Free Plasmas Shih-Nan Hsiao ^{1†*} , Pak-Man Yiu ^{2,3} , Li-Chun Chang ^{2,3} , Jyh-Wei Lee ^{2,3} , Makoto Sekine ¹ , and Masaru Hori ¹ ¹ Center for Low-temperature Plasma Sciences, Nagoya University, Nagoya, Japan ² Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan ³ Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei City, Taiwan
11:00-11:15	C-O-308 The innovative breakthrough of atomic layer deposited AlN thin films via the microwave-enhanced plasma technique Jia-Qi Xu ^{1,2†} , Ruo-Yan Huang ^{1,2} , Zong-Yue Li ^{1,2} , Haixiang Huang ² , Haoxuan Ding ^{1,2} , Yin ming Tao ^{1,2} Shui-Yang Lien ³ , Pao-Hsun Huang ^{1,2*} , and Yaoqi Ke ⁴ ¹ Key Laboratory for Advanced Semiconductor-grade Films, Fujian Provincial Key Laboratory of Oceanic Information Perception and intelligent Processing, School of Ocean Information Engineering Jimei University, Xiamen 361021, China. ² Xiamen Jingmai Technology Co., LTD, Jimei District, Xiamen City, 361021, China. ³ Xiamen Key Laboratory of Development and Application for Advanced Semiconductor Coating Technology; The School of Opto-electronic and Communication Engineering, Xiamen University of Technology, Xiamen, Fujian 361024, China. ⁴ College of Physical Education, Jimei University, Xiamen, 361021, China.
11:15-11:30	C-O-464 Scalable Synthesis of Janus WSSe Monolayers via MOCVD and Hydrogen Plasma-Enabled Atomic Substitution Tzu-Hsuan Yu ^{1†} , Yu-Chuan Lin ^{1*} ¹ Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu 300093, Taiwan

October 27, Monday	Room: The Lecture Hall. Chair(s): Sheng-Kuei Chiu / Myungjae Lee
13:30-13:50	C-I-19 Ultrathin waveguides for van-der-Waals optoelectronics Samuel Kim ¹ , Chengyun Hong ² , Gyuin Baek ¹ , Seungju Kwon ¹ , Youngjun Chung ¹ , Sunwoo Woo ¹ , Eunsun Kim ¹ , Myungjae Lee ^{1,2*†} ¹ Department of Materials Science and Engineering, Seoul National University, Seoul, South Korea ² Research Institute of Advanced Materials, Seoul National University, Seoul, South Korea
13:50-14:10	C-I-210 Enhanced Physical Properties of Magnetron Sputtered Ga ₂ O ₃ Thin Films via Sn Doping and Their Application in Self Powered Solar Blind Photodetectors Chien-Yie Tsay ^{1†*} , Hsuan-Meng Tsai ¹ , Phongsaphak Sittimart ^{2,3} , Tsuyoshi Yoshitake ³ ¹ Feng Chia University, Taichung, Taiwan ² King Mongkut's University of Technology North Bangkok, Bangkok, Thailand ³ Kyushu University, Fukuoka, Japan
14:10-14:25	C-O-195 Preliminary Study on Nanopillar Fabrication for Low-Loss Selectively Grown Active Nano-Pixel Waveguide Haisong Jiang ^{1†*} , Kiichi Hamamoto ¹ , Man-Yun Hsu ² , Jinn P. Chu ² ¹ Department of Applied Science for Electronics and Materials, Kyushu University, Kasuga, Japan ² Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
14:25-14:40	C-O-206 High-Energy X-ray Sensing with β -Ga ₂ O ₃ Thin Films Grown by RF Magnetron Sputtering Deveshwar Sasikumar ^{1†} , Venkatesh Narasihman ¹ , Balaji Gururajan ^{1*} , Wei Sheng Liu ^{1*} , Sheng Hsiang Kao ¹ , Ting Rui Hsu ¹ ¹ Department of Electrical Engineering, Yuan Ze University, Chung-Li Dist., Taoyuan, Taiwan
14:40-14:55	C-O-313 Physical properties of La-doped SnO ₂ transparent conducting oxide thin films for optoelectronic device applications Harish Sharma Akkera ^{1†*} , Madhukar Poloju ² , Paramita Sarkar ³ ¹ Department of Physics, BMS Institute of Technology & Management, Yelahanka, Bangalore-560064, Karnataka, India

	² School of Engineering, Sreenidhi University, Yamnampet, Ghatkesar, Hyderabad-501301, Telangana, India ³ Department of Electronics and Communication Engineering, BMS Institute of Technology & Management, Yelahanka, Bangalore-560064, Karnataka, India
14:55-15:10	C-O-74 ZnO/ZnS Heterostructures on Flexible Polyimide for Visible-Light and Gas Sensing Applications Xian-Yu Chen ^{1†} , Yu Hong Yang ² , Yi Hao Cai ² , Zong Liang Huang ² , ISAAC SONG-JENG HUANG ¹ , Hsiang Chen ^{2*} ¹ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei 10607, Taiwan ROC. ² Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, Puli, Taiwan ROC.

October 27, Monday	Room: The Lecture Hall. Chair(s): Chia-Yun Chen
15:30-15:50	C-I-397 Pasting Photoresist Film with Latent Image for Patterning 3D Samples Beyond Diffraction Limit Minoru Sasaki ^{†*} Toyota Technological Institute, Nagoya, Japan
15:50-16:05	C-O-307 New Insight about Effect of Bathocuproine on Efficiency Improvement of Metal-organic Halide Perovskite Solar Cells Yu-Han Zhao ¹ , Chih-Hung Tsai ² , Su-Hua Chen ² , Yi-Jia Chen ^{1,2*†} ¹ Department of Materials Science and Engineering, National Dong Hwa University, Shoufeng, Hualien, Taiwan ² Department of Opto-electronic Engineering, National Dong Hwa University, Shoufeng, Hualien, Taiwan

October 28, Tuesday	Room: R205. Chair(s): Ying-Chih Lai
10:50-11:10	C-I-44 Thin soft air and sweat permeable electronics for healthcare monitoring Xinge Yu ^{†*} City University of Hong Kong, Hong Kong, China
11:10-11:25	C-O-249 Deposition of VO ₂ thin films by multi-pulse HiPIMS and control of the oxygen ion flux Erdong Chen ^{1†} , Caroline Hain ² , Daniel Lundin ³ , Stephanos Konstantinidis ⁴ , Tetsuhide Shimizu ^{1*} ¹ Graduate School of Systems Design, Tokyo Metropolitan University, Tokyo, Japan ² Empa, Laboratory for Mechanics of Materials and Nanostructures, Thun, Switzerland ³ Plasma & Coatings Physics Division, Linköping University, Linköping, Sweden ⁴ Plasma-Surface interaction Chemistry, University of Mons, Mons, Belgium
11:25-11:40	C-O-141 Effect of Indium Addition on the Microstructure and Properties of Sn-31Bi Alloy Chih-Hsiang Liu [†] , Tzu-Hsiang Liao ¹ , Jia-Xiang Gao ¹ , Yu-An Shen ^{1*} ¹ Department of Materials Science and Engineering Feng-Chia University, Taichung, Taiwan

October 28, Tuesday	Room: R205. Chair(s): Daisuke Kiriya / Yi-Chia Chou
13:30-13:45	C-O-268 Super hydrophobic ZnO/PVDF-HFP Nanofiber film for Triboelectric Nanogenerator Applications Jun Jie Zhang [†] , Meng Fang Lin ^{1*} ¹ Department of Materials Engineering, Ming Chi University of Technology, New Taipei, Taiwan
13:45-14:00	C-O-355 Diamond synthesis from a solid carbon source by chemical transport using narrow gap microwave plasma Rurii Higuchi [†] , Yuma Sakai, Takumi Itoh, Naoto Komatsu, Atsuhisa Tougo, and Hiroaki Kakiuchi, Hiromasa Ohmi Department of Precision Engineering, Graduate School of Engineering, The University of Osaka, 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan
14:00-14:20	C-I-132 Low dimensional nitride-based material system for neuromorphic computing Chang-Hsun Huang ¹ , Chia-Yi Wu ¹ , Ko-Tao Lee ² , Yi-Chia Chou ^{1†*} ¹ Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

	² Qorvo, Inc., Richardson, TX, USA
14:20-14:40	C-I-167 Molecular Modulation of Transition Metal Dichalcogenides Daisuke Kiriya ^{1*} ¹ The University of Tokyo, Tokyo, Japan
14:40-15:00	C-I-479 Tellurium-Based Electronics Johnny C. Ho ^{1*} ¹ Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong SAR
15:00-15:15	C-O-184 Large-Area Synthesis of Two-Dimensional WS ₂ via Isolated Plasma Soft Deposition for Advanced Temperature Sensors Jun-Hyeok Kang ^{1†} , Jong-Hyun Jang ¹ , Seungmin Lee ¹ , Yewon Lee ¹ and Han-Ki Kim ^{1*} ¹ School of Advanced Materials Science and Engineering, Sungkyunkwan University 2066, Seobu-ro, Jangan-gu, Suwon-si, Gyeonggi-do, Republic of Korea
15:15-15:30	C-O-285 Flexible MoS ₂ -PVDF Piezoelectric Nanogenerators for High-Efficiency Mechanical Energy Harvesting and sensor Huang-Kai Zhou ^{1†} , Prof. Lung-Hao Hu ^{1*} ¹ Department of Mechanical and Electro-Mechanical Engineering, National Sun Yat-Sen University, No.70 Lien-hai Road, Kaohsiung, Taiwan
15:30-15:45	C-O-347 Enhanced Power Factor of MXene/Bi ₂ Te ₃ Composite Thin Films for Wearable Thermoelectric Applications Saicharan Dharavath [†] and R.K. Dash [*] Advanced Materials and NMES Lab, School of Engineering Sciences and Technology, University of Hyderabad, Hyderabad, Telangana, 500046, India.

October 28, Tuesday	Room: The Lecture Hall. Chair(s): Heng-Jui Liu
16:00-16:20	C-I-333 Flexible Composite Films Based on Inorganic Particles Embedded Polymers for Energy Harvesting and Sensing Applications Jae Su Yu ^{†,*} Kyung Hee University, Yongin, Republic of Korea
16:20-16:40	C-I-398 Synthesis of Sliding ferroelectric van der Waals materials for 2D memory transistors Yann-Wen Lan ^{†,*} Department of Physics, National Taiwan Normal University
16:40-16:55	C-O-396 Flexible Electrochemical Sensor Based on Graphene Oxide/Stainless Steel Nanocomposite for Sensitive Detection of Arsenic Compounds Chun-Wei Chang ^{1†} , Alfreda Krisna Altama ¹ , Balasubramanian Sriram ² , Elaiyappillai Elanthamilan ² , Jinn P. Chu ^{1*} , Yi-Le Liao ² , Sea-Fue Wang ² ¹ Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei 106335, Taiwan ² Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei 106344, Taiwan
16:55-17:10	C-O-457 Deposition of dielectric oxide/2D TMD stack by combined thermal ALD/MOCVD Shih-Hao Tseng ^{1†} , Tsung-Te Chou ² , Chan-Yuen Chang ² , Chien-Wei Chen, Yu-Chuan Lin ^{1*} ¹ Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan ² National Center for Instrumentation Research, National Applied Research Laboratories, Hsinchu, Taiwan
17:10-17:30	C-I-152 Leading edge semiconductor plasma processing with energy-efficient, environmentally benign, evolutionary, and educational (E ⁴) assurance Kenji Ishikawa ^{1†*} , Tran Trung Nguyen ¹ , Kazunori Miwa ¹ , Thi-Thuy-Nga Nguyen ¹ , Kenichi Inoue ¹ , and Takayoshi Tsutsumi ¹ ¹ Nagoya University, Nagoya, Japan

Symposium D. Tribological and Protective Coatings	
October 26, Sunday	Room: R204. Chair(s): Bo-Shiuan Li / Kuan-Che Lan
15:50-16:10	D-I-198 Selective Carbon Ion Acceleration as a Pathway for Stress-Controlled DLC Film Growth Tetsuhide Shimizu ^{1†*} ¹ Thin-film Process Engineering Laboratory, Tokyo Metropolitan University, Tokyo, Japan
16:10-16:30	D-I-445 Stress and Electrical Resistivity Evolution in Sputtered ITO Thin Films Jun Zhang ^{1†*} ¹ KLA Instruments, Shanghai, China
16:30-16:45	D-O-171 Improving Wear and Corrosion Resistance of Al/AlN/CrAlN Films on ZE53 Magnesium Alloy by DC Magnetron Sputtering Liang-Jyun Yang ¹ , Po-Hsun Wu(co-first author) ^{1†} , Zhi-Han Lai ² , Shih-Hsien Chang ² , Kun-Ming Lin ³ and Hsin-Chih Lin ^{1*} ¹ Department of Materials Science and Engineering, National Taiwan University, Taipei 10617, Taiwan ² Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei 10608, Taiwan ³ Department of Materials Science and Engineering, Feng Chia University, Taichung 40724, Taiwan
16:45-17:00	D-O-233 Effect of Target Power Output Modes on the Plasma Characteristics, Microstructure, and Mechanical Properties of Titanium Diboride Thin Films Jian-Fu Tang ¹ , Yi-Hsiang Yang ^{2†} , Hsiang-Chih Hsiao ² , Fu-Sen Yang ^{3,4} , Chi-Lung Chang ^{2,4*} ¹ Department of Semiconductor Engineering, Kaohsiung University of Science and Technology, Taiwan, ROC ² Department of Materials Engineering, Ming Chi University of Technology, Taiwan, ROC ³ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taiwan, ROC ⁴ Center for Plasma and Thin Film Technologies, Ming Chi University of technology, Taiwan, ROC
17:00-17:15	D-O-197 Mechanical properties of quaternary boride films Yung-I Chen ^{1*} , Guan-Ting Lu ^{1†} , Yu-Ting Ye ¹ ¹ Department of Optoelectronics and Materials Technology, National Taiwan Ocean University, Keelung, Taiwan
October 27, Monday	Room: R204. Chair(s): Yu-Jen Chou / Bo-Shiuan Li
13:30-13:50	D-I-148 Residual stress, defect, and micromechanical characterization of ion irradiated SiC Alex Leide ^{1,2†*} , Richard Todd ³ , David Armstrong ³ ¹ Materials Division, United Kingdom Atomic Energy Authority, Abingdon, United Kingdom ² Department of Engineering Science, University of Oxford, Oxford, United Kingdom ³ Department of Materials, University of Oxford, United Kingdom
13:50-14:10	D-I-231 Nitriding CoCrNi Medium-Entropy Alloy with Atmospheric Pressure Plasma Jet: Enhancements in Wear Performance Yu-Lin Kuo ^{1,2†} , Yung-Hsiang Chan ^{1*} , Jhao-Yu Guo ³ , Chun-Hway Hsueh ⁴ , Chia-Lin Li ⁴ ¹ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei 106335, Taiwan (R.O.C.) ² Advanced Manufacturing Research Center, National Taiwan University of Science and Technology, Taipei 106335, Taiwan (R.O.C.) ³ Department of Mechanical and Mechatronic Engineering, National Taiwan Ocean University, Keelung City 20224, Taiwan (R.O.C.) ⁴ Department of Materials Science and Engineering, National Taiwan University, Taipei, 10617 Taiwan (R.O.C.)
14:10-14:25	D-O-63 Wear-Resistant and Low-Friction Quenched Produced Diamond Coatings on Pure Titanium for Biomedical Applications Mahmoud Talaat Youssef ^{1†*} , Mohamed Ragab Diab ¹ , Ahmed Hamed Oraby ¹ , Tomohiro Yoshida ² , Tsuyoshi Yoshitake ¹ , Abdelrahman Zkria ^{1*} ¹ Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Kasuga, Fukuoka 816-8580,

	Japan ² Mechanics and Electronics Research Institute, Fukuoka Industrial Technology Center, Kitakyushu, Fukuoka 807-0831, Japan
14:25-14:40	D-O-155 Vacuum Sintering on the Microstructure and Properties of Ti6Al4V on 316 Stainless Steel Applied by Cold Spray and Slurry Paint Jung-Ting Tsai ^{1†*} , Hsuan-Ming Liao ¹ , Marc Müggenburg ² , Julian Unglaub ² , Liang Cheng ³ ¹ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, 106335, Taiwan ² Institute of Steel Structures, Technische Universität Braunschweig, Braunschweig, 38106, Germany ³ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, 10608, Taiwan
14:40-14:55	D-O-22 Influence of Duty Cycle on Surface Characteristic and Adhesion of CuO Composite PEO on AA 6061 Aluminum Alloy Sasithon Kaentown ^{1†} , Suwaree Chankitmongkorn ² , Onnjira Diewwanit ^{1*} , Wing Kiu Yeung ^{3*} ¹ Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi, Bangkok, 10140, Thailand ² Department of Industrial Engineering, School of Engineering, King Mongkut's Institute of Technology, Ladkrabang, Bangkok, 10520, Thailand ³ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, 10608, Taiwan
14:55-15:10	D-O-478 Pulsed Cathodic Arc Evaporation For Greater Control Over Ion Energy M. Učík ^{1,2} , P. Souček ¹ , P. Vašina ¹ , D. Casari ³ , S. Debnárová ¹ , M. Jílek ² , J. Klusoň ² , H. Bolvardi ⁴ , A. Lümke ⁴ , J. Michler ³ , F.F. Klimashin ^{3†*} ¹ MUNI – Masaryk University, Czech Republic ² PLATIT a.s., Šumperk, Czech Republic ³ EMPA – Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland ⁴ PLATIT AG, Selzach, Switzerland

October 27, Monday	Room: R204. Chair(s): Kuan-Che Lan / Alex Leide
15:30-15:50	D-I-50 Quenched-produced Diamond Coatings at Room Temperature: Tribological and Corrosion Resistance Performance Abdelrahman Zkria ^{1†*} , Hsin-Chih Lin ² , Tsuyoshi Yoshitake ¹ ¹ Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Kasuga, Fukuoka 816-8580, Japan ² Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan.
15:50-16:05	D-O-83 Fabrication of a Multifunctional Corrosion-Resistant Composite Coating on AZ31 Magnesium Alloy Wei-Lun Hsiao ^{1†} , Peng-Wei Chu ^{1*} ¹ Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan
16:05-16:20	D-O-11 Tribological and corrosion properties of TiN-based multilayer PVD coatings combined with nano-ceramic coating on magnesium alloys for automotive applications Adrian Claver ^{1†*} , Alfonso ¹ , García-Lorente ¹ , Zalakain ¹ , Oroz ² , Yécora ² , Rodrigo ² ¹ Institute for Advanced Materials and Mathematics (INAMAT2), Universidad Pública de Navarra (UPNA), Campus de Arrosadia, 31006 Pamplona, Spain ² Lurederra, Industrial Area Pergueta, C/A N° 1 31210, Los Arcos, Navarra, Spain
16:20-16:35	D-O-130 Minor Bi and In Additions to Sn Matrix: Enhancing Properties and Enabling Corrosion Protection of FeCoNiMnCu Jia-Xiang Gao ^{1†} , Chih-Hsiang Liu ¹ , Tzu-Hsiang Liao ¹ , Yu-An Shen ^{1*} ¹ Department of Materials Science and Engineering, Feng Chia University, Taiwan

October 28, Tuesday	Room: R204. Chair(s): Fan-Bean Wu / Alex Leide
16:00-16:15	D-O-68 Impact Fatigue and Mechanical Properties of TiSiN Multilayer Coatings under Different Bias Voltages with Compositional Design Tsung-Yuan Li ^{1†} , Bo-Jun Lee ¹ , Yin-Yu Chang ^{1*} ¹ Department of Mechanical and Computer-Aided Engineering, National Formosa University, Yunlin 632, Taiwan
16:15-16:30	D-O-273 Integration of a blue energy harvesting module with seawater electrolysis for sustainable hydrogen production Chieh-Jui Li ^{1,2} , Bor-Ray Chen ² , Po-Chun Chen ¹ , Meng-Fang Lin ^{2*} ¹ Institute of Materials Science and Engineering, Department of Materials and Engineering, National Taipei University of Technology ² Department of Materials Engineering, Ming-Chi University of Technology, New Taipei City, Taiwan
16:30-16:45	D-O-366 Influence of Second Phases on MAO Coating Behavior and Corrosion Resistance of ZE51/ZE53 Mg Alloys: Strategies for Discharge Uniformity Po-Han Wu ^{1†} , Shih-Yen Huang ² , Hou-Jen Chen ³ , Wei-Lun Hsiao ⁴ , I-Chung Cheng ¹ , Hsin-Chih Lin ³ , Peng-Wei Chu ⁴ , Yueh-Lien Lee ^{2*} ¹ Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan ² Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan ³ Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan ⁴ Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan
16:45-17:05	D-I-127 Towards a Deeper Understanding of Reactive HiPIMS Discharges Through Ionization Region Modeling Lundin ^{1*} , Fischer ^{1,2} , Rudolph ³ , Gudmundsson ^{4,5} ¹ Plasma and Coatings Physics, Linköping University, Linköping, Sweden ² Evatec AG, Trübbach, Switzerland ³ Leibniz Institute of Surface Engineering (IOM), Leipzig, Germany ⁴ Science Institute, University of Iceland, Reykjavik, Iceland ⁵ Division of Space and Plasma Physics, KTH Royal Institute of Technology, Stockholm, Sweden
17:05-17:20	D-O-51 Effects of Nitrogen Flow Ratio on the Mechanical Properties of Cosputtered (TiZrHfW) _x Films Hsiu-Ming Chang ^{1†} , Yung-I Chen ^{1*} , Li-Chun Chang ^{2,3} ¹ Department of Optoelectronics and Materials Technology, National Taiwan Ocean University, Keelung, Taiwan ² Department of Materials Engineering, Ming Chi University of Technology, New Taipei, Taiwan ³ Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei, Taiwan
17:20-17:35	D-O-17 Microstructure and Tribological Performance of Magnetron Co-Sputtered MoTiNiCrVSi _x Thin Film High Entropy Alloys Jhu-Cyuan Chiang [†] , Heng Chi Chang, Yu-Jen Chou [*] Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan

Symposium E. Organic and Biological Coatings

October 26, Sunday	Room: R205. Chair(s): Sandra E. Rodil / Yung Chang
15:50-16:10	E-I-10 Surface Engineering for Orthopaedic and Dental Implants: Tailoring Osteoinduction, Inflammation, and Antibacterial Properties Silva-Bermudez, Phaedra ¹ , Almaguer-Flores Argelia ² , Millan-Ramos Benjamin ³ , Olivares-Navarrete Rene ⁴ , García Victor I. ² , Rodil Sandra E ^{3†*} ¹ Unidad de Ingeniería de Tejidos, Terapia Celular y Medicina Regenerativa, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, 14389 CDMX, Mexico ² Laboratorio de Biointerfases, Facultad de Odontología, División de Estudios de Posgrado e Investigación, Universidad Nacional Autónoma de México, CDMX 04510, Mexico ³ Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, CDMX 04510, Mexico ⁴ Department of Biomedical Engineering Commonwealth, College of Engineering, Virginia University, Richmond, VA 23284, United States of America

16:10-16:30	E-I-227 Bio-inspired Zwitterionic Interface Yung Chang ^{*†} R&D Center for Membrane Technology, Department of Chemical Engineering, Chung Yuan Christian University, Jhong-Li, Taoyuan 320, Taiwan
16:30-16:45	E-O-16 Addictive Sr-doped thin-film bioactive glass surface modification to enhance biocompatibility and osteointegration of metallic implants Sudharshan PG ^{1†} , Chin-Chean Wong ² , Yu-Jen Chou ^{1*} ¹ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei 10607, Taiwan ² Department of Orthopedics, Taipei Medical University, Shuang Ho Hospital, New Taipei City 23561, Taiwan
16:45-17:00	E-O-248 Multifunctional Surface Modification of Pure Titanium via Micro-Arc Oxidation and Thermosensitive Hydrogel for Enhanced Antibacterial Activity and Osseointegration Min-Che Hsieh ^{1†} , Shu-Chuan Liao ^{1*} ¹ Department of Chemical and Materials Engineering, Tamkang University, New Taipei City, Taiwan
17:00-17:15	E-O-289 Fabrication of Glutathione-Supplemented Polylactic Acid via Oxygen Plasma Functionalization for Wound Dressing Applications Anindita Bhar ^{1,2†} , Witthawat Siriphongwekhin ³ , Jyh-Wei Lee ^{1,4} , Wei-Yu Chen ^{1,2*} ¹ Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei City, Taiwan ² International Ph.D. Program in Plasma and Thin Film Technology, New Taipei City, Taiwan ³ Department of Chemical Engineering, King Mongkut's University of Technology Thonburi, Bangkok, Thailand ⁴ Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan
17:15-17:30	E-O-311 Self-assembled polypeptide nanofibers integrated within a sodium alginate hydrogel for retinal biomedical engineering Chia-Hsien Lee ^{1†} , Wen-Han Tsao ³ , Yu-Ching Huang ^{1,2} , Wei-Fang Su ¹ , Meng-Fang Lin ^{1,2*} ¹ Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan ² Biochemical Technology R&D Center, Ming Chi University of Technology, New Taipei City, Taiwan ³ Bachelor Program in Semiconductor Materials and Fabrication, Ming Chi University of Technology, New Taipei City, Taiwan

October 27, Monday	Room: R205. Chair(s): Yoshinori Sunaga /Kuang-Chih Tso
13:30-13:50	E-I-103 Biocompatible Film Coated Implantable Devices for In Vivo Neural Imaging and Optical Stimulation Yoshinori Sunaga ^{1†} , Virgil Castillo ¹ , Kuang-Chih Tso ¹ , Yasumi Ohta ¹ , Jun Ohta ^{1*} ¹ Nara Institute of Science and Technology, Ikoma, Japan
13:50-14:10	E-I-124 Scalable Artificial Vision Device Using CBD-IrO _x Electrodes and Smart CMOS for High-Resolution Retinal Stimulation Kuang-Chih Tso ^{1†} , Yoshinori Sunaga ¹ , Yuki Nakanishi ² , Wisaroot Sriitsaranusorn ² , Yasuo Terasawa ³ , Kiyotaka Sasagawa ^{2,4} , Po-Chun Chen ⁵ , Pu-Wei Wu ⁶ , Jun Ohta ^{1*} ¹ Institute for Research Initiatives, Nara Institute of Science and Technology, Ikoma, Japan ² Division of Materials Science, Graduate School of Science and Technology, Nara Institute of Science and Technology, Ikoma, Japan ³ NIDEK CO., LTD., Gamagori, Japan ⁴ Medilux Research Center, Graduate School of Science and Technology, Nara Institute of Science and Technology, Ikoma, Japan ⁵ Department of Materials Science and Engineering, National Yang Ming Chiao Tung University Hsinchu 300, Taiwan, ROC ⁶ Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan
14:10-14:25	E-O-343 Enhancing the Accuracy of AI Drug Identification in Pharmaceutical Packaging through Anti-Reflective Polymer Coatings Li-Yun Su ^{1,2*} , Tsung-Sheng Cheng ^{3*} , Sheng-Zhi Hu ³ , Pin-Yuan Wang ^{4†} , Kuan-Chieh Wu ¹ , Chung-Chieh Chien ¹ , Chia-Hsing Chou ¹

	<p>¹Department of Chemical and Materials Engineering, Southern Taiwan University of Science and Technology, Tainan 71005, Taiwan</p> <p>²Department of Chemical Engineering & Biotechnology, Institute of Biomedical Engineering and Biotechnology, National Taipei University of Technology, Taipei 10608, Taiwan</p> <p>³Department of Electronic Engineering, Southern Taiwan University of Science and Technology, Tainan 71005, Taiwan.</p> <p>⁴Department of Chemical Engineering, Ming Chi University of Technology, New Taipei City 243303, Taiwan</p>
14:25-14:40	<p>E-O-362</p> <p>Influence of polypyrrole morphology electrodeposited in supercritical CO₂ emulsified electrolyte on its electrochemical properties</p> <p>Punvinai Vinaisuratarn^{1†*}, Tomoyuki Kurioka^{2,3}, Tso Fu Mark Chang^{2,3}, Masato Sone^{2,3}</p> <p>¹Department of Material Science and Engineering, School of Materials and Chemical Technology, Institute of Science Tokyo, Japan</p> <p>²Materials and Structures Laboratory, Institute of Integrated Research, Institute of Science Tokyo, Japan,</p> <p>³Laboratory for Future Interdisciplinary Research of Science and Technology, Institute of Integrated Research, Institute of Science Tokyo, Japan</p>
14:40-14:55	<p>E-O-403</p> <p>Resistive Switching Characteristics of Micrometer-Scale Cylindrical Pectin-Based RRAM Devices</p> <p>EN-YANG TSAI^{1†}, TIEN-HUI WU^{1*}, WEI-MING CHEN^{2*}, PO-WEI CHI^{2,3*}, PHILLIP M. WU^{2*}, MAW-KUEN WU^{2*}, HWAI-EN LIN^{1*}</p> <p>¹National Taipei University of Technology, Graduate Institute of Mechatronic Engineering, Taipei, Taiwan</p> <p>²Institute of Physics, Academia Sinica, Taipei 11529, Taiwan</p> <p>³Department of Mechanical Engineering, Chung Yuan Christian University, Taoyuan City 32023, Taiwan</p>
14:55-15:10	<p>E-O-471</p> <p>Ordered DNA Fragmentation over UV-patterned SU-8 Using Tn5 Transposase</p> <p>Christian Hackett^{1,2‡†}, Alice Hu^{1,3‡†}, Cassidy Kirschenbaum^{1,4‡†}, Xinyu(Tiffany) Li^{1,5‡†*}, Kevin Zhang^{1,6‡†}, Selina Zhang^{1,7‡†}, Christian Saby¹, Jonathan Sokolov¹, Miriam Rafailovich¹</p> <p>[‡]Authors contributed equally to this work</p> <p>¹Stony Brook University, NY, 11794</p> <p>²South Side High School, NY, 11570</p> <p>³King Senior High School, FL, 33610</p> <p>⁴Brookline High School, MA, 02445</p> <p>⁵Shenzhen College of International Education, Shenzhen, China</p> <p>⁶North Hunterdon High School, NJ, 08801</p> <p>⁷Harvard University, MA, 02138</p>

October 28, Tuesday	Room: R205. Chair(s): Fang Xie / Peng Chen
16:10-16:30	<p>E-I-66</p> <p>Plasmonic Nanostructure Arrays for Enhanced Fluorescence: Biosensing and Bioimaging Applications</p> <p>Fang Xie^{†*}</p> <p>Department of Materials, Imperial College London and London Centre for Nanotechnology, London SW7 2AZ, UK)</p>
16:30-16:50	<p>E-I-426</p> <p>Smart Surface Functionalization of Titanium for Dual Antibacterial and Osteoconductive Functions</p> <p>Peng Chen^{1†*}, Ying-Sui Sun², Hiroyasu Kanetaka^{1,3}</p> <p>¹Graduate School of Dentistry, Tohoku University, Sendai, Japan</p> <p>²School of Dental Technology, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan</p> <p>³Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan</p>
16:50-17:10	<p>E-I-450</p> <p>Bioactive Surface Modification for Bio-implant</p> <p>Han-Cheol Choe^{†*}</p> <p>Advanced Functional Surface and Biomaterials Research Lab, Department of Dental Materials and Convergence Research Center for Treatment of Oral Soft Tissue Disease (MRC), College of Dentistry, Chosun University, South Korea</p>
17:10-17:25	<p>E-O-185</p> <p>A Portable Sensor for the Simultaneous Detection of Catechol and Vanillin in Food and Water Samples Using Ag₂Se@f-CB Composite.</p> <p>Naveenkumar K^{1,2†}, Mani Govindasamy^{3*} and Ren-Jei Chung^{2*}</p> <p>¹International Graduate Program in Energy and Optoelectronic Materials (EOMP).</p>

	<p>²Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei 10608, Taiwan.</p> <p>³Research Centre for Intelligent Medical Devices, Ming Chi University of Technology, New Taipei City 24301, Taiwan.</p>
17:25-17:40	<p>E-O-258</p> <p>Electrodeposition of Cu/Polyaniline Composite Electrode for Non-Enzymatic Electrochemical Glucose Sensors Runze Huang^{1†*}, Tomoyuki Kurioka^{1,2}, Chun-Yi Chen¹, Hwai En Lin³, Yung-Jung Hsu^{1,4}, Tso-Fu Mark Chang^{1,2}, Masato Sone^{1,2}</p> <p>¹Materials and Structures Laboratory, Institute of Integrated Research, Institute of Science Tokyo, Kanagawa 226-8501, Japan</p> <p>²Laboratory for Future Interdisciplinary Research of Science and Technology, Institute of Integrated Research, Institute of Science Tokyo, Kanagawa 226-8501, Japan</p> <p>³Department of Mechanical Engineering, National Taipei University of Technology, Taipei 10608, Taiwan</p> <p>⁴Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu 300, Taiwan</p>

Symposium F. Medium/High-entropy Coatings for Functional Applications	
October 26, Sunday	Room: R303. Chair(s): Shih-Hsun Chen / Hung-Wei Yen
15:50-16:10	<p>F-I-422</p> <p>Tailoring CoCrNi Medium-Entropy Alloys through Silicon Alloying for Enhanced Hydrogen Embrittlement Resistance Tzu-Chi Huang¹, Yi-Hsuan Sun¹, Yen-Ming Ko^{1,2}, Yueh-Lien Lee³, Hung-Wei Yen^{*†1,2}</p> <p>¹Department of Materials Science & Engineering, National Taiwan University, Taipei, Taiwan</p> <p>²High Entropy Materials Center, National Tsing Hua University, Hsinchu, Taiwan</p> <p>³Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan</p>
16:10-16:30	<p>F-I-461</p> <p>Versatile Applications of High-Entropy Nitride Thin Films Chuan-Feng Shih^{1†}, Cheng-Hsien Tu^{1*}, Cheng-Hsien Yeh^{1*}</p> <p>¹Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan</p>
16:30-16:45	<p>F-O-315</p> <p>Structural Integrity and Electrical Behavior of Lightweight High Entropy Nitride Thin Films under 300 keV Ar⁺ Irradiation June-Hung Hsiao^{1†}, Kuan-Che Lan^{1,2*}, Yin-Yu Chang³</p> <p>¹Department of Engineering and System Science, National Tsing Hua University, Taiwan (ROC)</p> <p>²Institute of Nuclear Engineering and Science, National Tsing Hua University, Taiwan (ROC)</p> <p>³ Department of Mechanical and Computer-Aided Engineering, National Formosa University, Taiwan (ROC)</p>
16:45-17:00	<p>F-O-142</p> <p>Investigating Interfacial Reactions and Shear Strength of Sn-3.5Ag/FeCoNiMn Alloy Tzu-Hsiang Liao^{1†}, Jia-Xiang Gao¹, Chih-Hsiang Liu¹, Chuan Zhang², Yu-An Shen^{1*}</p> <p>¹Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</p> <p>²CompuTherm LLC, Middleton, WI 53562, USA</p>
17:00-17:15	<p>F-O-253</p> <p>High Performance Methanol Oxidation Enabled by Metal Organic Framework-Derived Electrocatalysts Po-Chen Chang-Chien^{1†}, Jyh-Ming Ting^{1*}</p> <p>¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan 70101 Taiwan</p>
17:15-17:30	<p>F-O-395</p> <p>Unlocking the Potential of High-Entropy Prussian Blue for Superior Photo-Fenton Oxidation Ying-Ling Jhōng , Sheng-Wei Lin[†], Jyh-Ming Ting[*]</p> <p>Department of Materials Science and Engineering, National Cheng Kung University, Tainan 70101, Taiwan</p>
October 28, Tuesday	Room: R204. Chair(s): Jyh-Wei Lee / Pavel Souček
13:40-14:00	<p>F-I-125</p> <p>Epitaxy and twinning in sputter-deposited cantor alloy thin films Erik Lewin^{1,*}</p> <p>¹Department of Chemistry – Ångström laboratory, Uppsala university, Uppsala, Sweden</p>

14:00-14:20	F-I-39 Refractory metal-based high entropy (CrHfMoTaW) _x N _y ceramics deposited by HiPIMS Lukáš Vrána, Matej Fekete, Tatiana Pitoňáková, Pavel Souček ^{†*} Masaryk University, Faculty of Science, Kotlářská 2, 61137 Brno, Czech Republic
14:20-14:40	F-I-287 Medium to High Entropy Alloy Coatings for High Temperature Applications Hideyuki Murakami ^{1†*} , An-Chou Yeh ² ¹ Research Center for Structural Materials, National Institute for Materials Science, Tsukuba-City, Japan. ² High Entropy Materials Center, National Tsing Hua University, Hsinchu, Taiwan
14:40-14:55	F-O-264 Synthesis of AlCoCrFeNi nanoparticles using high-power pulsed hollow cathode sputtering Kosei Kikuchi ^{1†} , Takeru Fujiki ¹ , Robert Boyd ² , Rommel Paulo Viloan ² , Sebastian Ekeroth ² , Chia-Lin Li ³ , Jyh-Wei Lee ³ , Ulf Helmersson ² and Tetsuhide Shimizu ^{1,2*} ¹ Department of Systems Design, Tokyo Metropolitan University, Tokyo, Japan ² Department of IFM, Plasma & Coating Physics Division, Linköping University, Linköping, Sweden ³ Department of Material Engineering, Ming Chi University, New Taipei City, Taiwan
14:55-15:10	F-O-472 Unlocking High-Efficiency Electro-Fenton Oxidation with Phase-Controlled Oxide-Sulfide Heterostructure Yemima Purba [†] and Jyh-Ming Ting [*] Department of Materials Science and Engineering, National Cheng Kung University, Tainan 70101 Taiwan
15:10-15:25	F-O-47 Impact of Al, Ti and Nb Composition on the Thermal Stability and Oxidation Resistance of AlTiNbSiCrN High-Entropy Nitride Coatings Duc Manh Nguyen [†] , Yin-Yu Chang [*] , Chu-En Lee, Xin-Yuan Li Department of Mechanical and Computer-Aided Engineering, National Formosa University, Yunlin 632, Taiwan
15:25-15:40	F-O-386 Microstructures and Electrocatalytic Properties of AlCoCrFeNiTiN High Entropy Alloy Thin Films Gao-Zheng Dai ^{1†} , Bih-Show Lou ^{2,3*} , Chia-Lin Li ⁴ , Jyh-Wei Lee ^{1,4,5,6} ¹ Department of Materials Engineering, Ming Chi University of Technology, New Taipei, Taiwan ² Chemistry Division, Center for General Education, Chang Gung University, Taoyuan, Taiwan ³ Department of Orthopaedic Surgery, New Taipei Municipal TuCheng Hospital, Chang Gung Memorial Hospital, Taiwan ⁴ Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei, Taiwan ⁵ College of Engineering, Chang Gung University, Taoyuan, Taiwan ⁶ High Entropy Materials Center, National Tsing Hua University, Hsinchu, Taiwan

Symposium G. Advancing Coatings and Thin Films through Characterization, Simulation, Modeling, and Data Science

October 27, Monday	Room: R303. Chair(s): Chao-Cheng Kaun / Jen-Chuan Tung
13:30-13:50	G-I-373 Multi-method workflow for simulating tensorial properties of amorphous thin films: case studies of a-SiN and a-WBC thin films David Holec ^{1†*} , Ganesh K. Nayak ² , Pavel Ondračka ³ ¹ Department of Materials Science, Montanuniversität Leoben, Leoben, Austria ² Materials Chemistry, RWTH Aachen, Aachen, Germany ³ Department of Plasma Physics and Technology, Masaryk University, Brno, Czech Republic
13:50-14:10	G-I-94 Data-Driven Design of Multi-Element Thermal Insulating Thin Films for Advanced Thermal Management Yen-Ju Wu ^{1†*} , Michiko Sasaki ² , Masahiro Goto ² , Yibin Xu ¹ ¹ Data-driven Inorganic Materials Group, Center for Basic Research on Materials (CBRM), National Institute for Materials Science (NIMS), 1-2-1 Sengen, Tsukuba, Ibaraki 305-0047, Japan ² Thermal Energy Materials Group, Research Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), 1-2-1 Sengen, Tsukuba, Ibaraki 305-0047, Japan
14:10-14:25	G-O-14 Interfacial Atomic Engineering for Unprecedented Direct Adhesion of Noble Metal Electrodes to Oxide Substrates Junghoem Yun ^{1†*}

	¹ Extreme Materials Research Institute, Korea Institute of Materials Science, Changwon, Republic of Korea
14:25-14:40	G-O-357 Wafer-Scale Low-Temperature Growth of Monolayer MoS ₂ on SiO ₂ /Si Substrates Yi-Ting Huang ^{1†} , Wei-Cheng Lin ¹ , Gui-Sheng Zeng ^{2*} , Sheng-Hui Chen ^{1*} ¹ Department of Optics and Photonics, National Central University, Taoyuan, Taiwan ² National Center for Instrumentation Research, National Institutes of Applied Research, 20 R&D Rd. VI, Hsinchu Science Park, Hsinchu, Taiwan
14:40-14:55	G-O-160 Electromigration Reliability of Eutectic Bi-Sn Micro Joints with Different Surface Coatings over Cu Pads Zhao-Yu Yang ¹ , Cheng-Yu Lee ^{1,2} , Chih-Ming Chen ³ , Yu-An Shen ⁴ , and Cheng-En Ho ^{1,*} ¹ Department of Chemical Engineering & Materials Science, Yuan Ze University, Taoyuan City 320, Taiwan ² Kinsus Interconnect Technology Corp., Taoyuan City 327, Taiwan (R.O.C.) ³ Department of Chemical Engineering, National Chung Hsing University, South Dist., Taichung, Taiwan, ⁴ Department of Materials Science and Engineering, Feng Chia University, Xitun Dist., Taichung, Taiwan,
14:55-15:10	G-O-498 Vacancy-concentration-dependent thermal stability of fcc-(Ti,Al)N _x predicted via chemical-environment-sensitive diffusion activation energies Ganesh K Nayak ^{1†*} , David Holec ² , Jochen M. Schneider ¹ ¹ Materials Chemistry, RWTH Aachen, Aachen, Germany ² Department of Materials Science, Montanuniversität Leoben, Leoben, Austria

October 27, Monday	Room: R303. Chair(s): Chao-Cheng Kaun / Jen-Chuan Tung
15:30-15:50	G-I-402 Compression vs. Tension-Induced Wrinkle Formation on Thin Film/Compliant Substrate Structures: A Numerical Simulation Study Md Al Rifat Anan ¹ , Yu-Lin Shen ^{1†*} ¹ Department of Mechanical Engineering, University of New Mexico, Albuquerque, NM 87131, U.S.A.
15:50-16:05	G-O-26 Exploring Ionized Metal Flux Fraction in Magnetron Sputtering: Insights from Laboratory and Industrial Applications Petr Vasina ^{1,*} , P. Klein ¹ , J.Hnilica ¹ , M. Ondryas ¹ , G. Lelovics ¹ , V. Sochora ² ¹ Department of Plasma Physics and Technology, Faculty of Science, Masaryk University, Brno, Czech Republic ² SHM s. r. o., Sumperk, Czech Republic
16:05-16:20	G-O-359 Integration of Machine Learning in Optimizing Plasma Polymerized Hexamethyldisilazane for Long-Term Corrosion Protection of Stainless Steel Danang Tri Hartanto [†] , Meng-Jiy Wang [*] Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
16:20-16:35	G-O-168 Predicting Sb ₂ Se ₃ Solar Cell Efficiency: A Machine Learning Approach Based on Crystalline Structure and Band Engineering Yu-Jen Hung [†] , Chih-Hsi Peng and Yi-Cheng Lin [*] Department of Mechatronics Engineering, National Changhua University of Education, Changhua, Taiwan

October 28, Tuesday	Room: R303. Chair(s): David Holec / Po-Liang Liu
13:30-13:50	G-I-126 In situ Scanning Electron Microscopy Studies of Graphene Growth on Molten Metals K. Bukvišová ^{1,2} , R. Kalousek ^{1,3} , J. Zlámal ^{1,3} , M. Patočka ³ , S. Kodambaka ^{4†*} , J. Planer ¹ , V. Mahel ^{2,3} , D. Citterberg ¹ , L. Novák ² , T. Šikola ^{1,3} , M. Kolíbal ^{1,3} ¹ CEITEC BUT, Brno University of Technology, Purkyňova 123, 612 00 Brno, Czech Republic ² Thermo Fisher Scientific, Vlastimila Pecha 12, 627 00 Brno, Czech Republic ³ Institute of Physical Engineering, Brno University of Technology, Technická 2, 616 69 Brno, Czech Republic ⁴ Department of Materials Science and Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, USA
13:50-14:10	G-I-146 Hydrogen Charge-State Tuning in Metal-Hydride Thin Films and Application of an Autonomous Thin-Film Growth System

	Ryota Shimizu ^{†*} Institute for Molecular Science, Okazaki, Aichi, Japan
14:10-14:25	G-O-230 In-situ Deposition Rate Measurement and Real-time Thickness Estimation for Arc Ion-plating Gun Hwan Lee ^{1†*} ¹ Korea Institute of Materials Science (KIMS), Changwon, Korea
14:25-14:40	G-O-123 Nanoscale electrochemistry of WSe ₂ -coated NbS ₂ metal–semiconductor heterostructures Septia Kholimatussadiyah ^{1,2,3†} , Mohammad Qorbani ^{2,3} , Kuei-Hsien Chen ^{2,4} , Li-Chyong Chen ^{1,2,3*} ¹ Department of Physics, National Taiwan University, Taipei, Taiwan ² Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan ³ Center of Atomic Initiative for New Materials, National Taiwan University, Taipei, Taiwan ⁴ Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan
14:40-14:55	G-O-291 Investigation of Surface Reconstruction Mechanisms Across Semiconductors, Metals, and Metal Oxides: a review Cheng-Hsi Yeh ^{1†} , You-Hsuan Huang ² , and Hsin-Yi Tiffany Chen ^{1,2,3*} ¹ Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan ² Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan ³ College of Semiconductor Research, National Tsing Hua University, Hsinchu, Taiwan
14:55-15:10	G-O-356 Investigation of Deposition Techniques and Potential Applications of Hexagonal Boron Nitride Thin Films Bo-Jing Shi [†] , Tsai-Chieh Chen, and Sheng-Hui Chen [*] Department of Optics and Photonics, National Central University, Taoyuan, Taiwan

October 28, Tuesday	Room: R303. Chair(s): David Holec / Po-Liang Liu
16:00-16:20	G-I-428 Cutting-Edge Process Monitoring Techniques for Thin Film Coatings for Process Development, Production Control and Machine Learning (ML) Thomas Schütte ^{1†*} , Jan-Peter Urbach ¹ , Peter Neiß ¹ , Marius Radloff ¹ , Hokuto Kikuchi ¹ ¹ PLASUS GmbH, Mering, Germany
16:20-16:35	G-O-322 Interfacial Effects of Substrate-Dependence in Van der Waals Epitaxy of Sb ₂ Se ₃ and InSe on Sapphire, SiO ₂ , and WS ₂ Soe Min Htet ^{1†} , Sheng-Wei Hsiao ² , Ho-Chien Liu ¹ , Chun-Yu Kuo ¹ , Chia-Hsing Wu ³ , Yen-Teng Ho ³ , Chao-An Jong ⁴ , Sheng-Rui Jian ⁵ , and Chu-Shou Yang ^{1*} ¹ Department of Electrical Engineering, Tatung University, Taipei 104327, Taiwan ² National Synchrotron Radiation Research Center, Hsinchu 300092, Taiwan ³ Raynext Semiconductor Co., Zhubei City, Hsinchu County 302052, Taiwan ⁴ National Institutes of Applied Research, Taiwan Semiconductor Research Institute, Hsinchu, Taiwan ⁵ Department of Materials Science and Engineering, I-Shou University, Kaohsiung 84001, Taiwan
16:35-16:50	G-O-404 CuO-Based Semi-Transparent Solar Cells with DMD Top Electrodes: Fabrication and Simulation Insights Deveshwar Sasikumar ^{1†} , Venkatesh Narasihman ¹ , Balaji Gururajan ^{1*} , Bhavya Kondapavuluri ¹ , Wei-Sheng Liu ¹ , Snehal Mondal ² ¹ Department of Electrical Engineering, Yuan Ze University, Taoyuan, Taiwan ² DST-IEST Solar PV Hub, School of Advanced Materials, Indian Institute of Engineering Science and Technology, Howrah, India
16:50-17:05	G-O-354 GeSn Narrowband Filters for Short-Wavelength Infrared via Low-Temperature Deposition Song-Ying Wu [†] , Ya-Hsuan Lin, and Sheng-Hui Chen [*] Department of Optics and Photonics, National Central University, Taoyuan, Taiwan
17:05-17:20	G-O-157 Impact of Copper Oxidation on Transmission Performance of mmWave Microstrip Antenna Yu-Hsun Chang ^{1†} , Chih-Ling Chang ¹ , Ying-Chih Chiang ¹ , Chien-Chang Huang ² , and Cheng-En Ho ^{1*} ¹ Department of Chemical Engineering & Materials Science, Yuan Ze University, Taoyuan City 320, Taiwan ² Department of Electrical Engineering, Yuan Ze University, Taiwan (R.O.C.)

TACT 2025 Poster Program

Poster Number	Title	All Authors	Presenter	Corresponding Author	Affiliation
A-P-24	Sol-gel Fabrication of Silver-doped CuAlO ₂ Thin Films with Enhanced Thermoelectric Properties	Cheng-Han Tsai, Vincent K. S. Hsiao	Cheng-Han Tsai	Vincent K. S. Hsiao	National Chi Nan University
A-P-36	Enhanced long-term cyclic durability of electrochromic WO ₃ thin films by stacking Ta ₂ O ₅ layer	JeongHoon Yang, Kwang-Mo Kang, Yoon-chaeh Nah, Dong Hun Kim	JeongHoon Yang	Dong Hun Kim	MyongJi University
A-P-41	Effects of Bimetallic Composite Catalysis on Electrochemical Carbon Dioxide Reduction Reaction	Chia-Hsiung Chang, Tzu-Hsiu Hung, Ji-Min, Chang, Fan-Bean Wu, Tzu Hsuan Chiang	Chia-Hsiung Chang	Fan-Bean Wu	National United University
A-P-43	Preparation and characterization of SiO ₂ microsphere based radiative cooling thick films	Pin-Han Chen, Shao-Ju Shih	Pin-Han Chen	Shao-Ju Shih	National Taiwan University of Science and Technology
A-P-60	A fuel-cell-type multi-terminal sensor for high-concentration hydrogen gas monitoring	Seong-Jun Kwon, Soon-Won Jung, Byeongho Na, Seong-Cheol Kim, SungHo Choi, Seung-Yun Lee	Seong-Jun Kwon	Seung-Yun Lee	Hanbat National University
A-P-64	Optical Properties and Thermal Stability of Colorful Molybdenum Oxide-Based Spectrally Selective Absorbers	Sheng-Jen Cheng, Yu-Ting Yeh, Jau-Shung Fang, Yi-Yen Chen, Ting-Kan, Tsai	Yu-Ting Yeh	Ting-Kan, Tsai	National Formosa University
A-P-76	Recovery of Metal Iodides from Waste Polarizer Films and Lead-Acid Batteries for the Synthesis of Perovskite Solar Cells	Jun-An Su, Fan-Wei Liu	Jun-An Su	Fan-Wei Liu	National Chung Hsing University
A-P-84	Design and characterization of zeolite-based hydrophobic films for radiative cooling	Shou-Yi Chang, Han-Xun Huang, and Shao-Ju Shih	Shou-Yi Chang	Shao-Ju Shih	National Taiwan University of Science and Technology
A-P-104	BCFZY(BaCoFeZrYO ₃)/BCZYYb(BaCeZrYbO ₃) composite cathode coatings by screen-printing method for protonic solid oxide fuel cell	Tzu-Wei Tseng, Yen-Yu Chen, Chia-Yen Lee	Tzu-Wei, Tseng	Yen-Yu Chen	National Pingtung University of Science and Technology
A-P-107	Oat Powder-Doped PDMS triboelectric nanogenerator for Enhanced Electric Output performance and Its application	You-Jun Huang, Tzu-Hsuan Lin, Chia-Wei Hung, Chen-Kuei Chung	You-Jun Huang	Chen-Kuei Chung	National Cheng Kung University
A-P-118	Scale-Up of Air Atmospheric Pressure Plasma Modification on Graphite Felt Electrodes for Improved Performance in All-Vanadium Redox Flow Batteries	Chun Hsiang Lin, Jyun Bin Chen, Song-Yu Chen	Chun Hsiang Lin	Yu-Lin Kuo	National Taiwan University of Science and Technology

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A-P-178	Study on Sputtered Molybdenum Nitride Films for Hydrogen Generation Catalysts	Hung-I Wu, Ying-Hsiang Lin, Ming-Yu Yang, Shih-Hung Lin, Fan-Bean Wu, Chi-Yueh Chang, Thi Xuyen Nguyen, Ruet-Chi Lin, Jyh-Ming Ting, Wan-Yu Wu	Hung-I Wu	Wan-Yu Wu	National Yunlin University of Science and Technology
A-P-182	Co-Sputtered Thermoelectric Layers on PEDOT:PSS Fibers for Enhanced Performance	Seungwoo Han, Da-hye Kim, Seungik Shin and Seong-jae Jeon	Seungwoo Han	Seungwoo Han	Korea Institute of Machinery and Materials
A-P-186	Enhanced Vanadium Redox Flow Battery Performance via High-Entropy Spinel Oxide/rGO Composite Electrocatalyst	Shao-Ming Tseng, Aknachev Mebreku Demeku, Yu-Ling Wang, Chen-Hao Wang	Shao-Ming Tseng	Chen-Hao Wang	National Taiwan University of Science and Technology
A-P-202	Heterogeneous Assembly of Pt-clusters On Hierarchically Structured $\text{CoO}_x@/\text{SnPd}_x@/\text{SnO}_2$ Quaternary Nanocatalysts Manifesting Oxygen Reduction Reaction Performance	Shu-Yu Lee, Tsan-Yao Chen, Wei Yeh	Shu-Yu Lee	Tsan-Yao Chen	National Tsing Hua University
A-P-214	Bifunctional Pt-SnO _x Nanorods for Enhanced Oxygen Reduction and Hydrogen Evolution Reactions.	Shih-Han Wang, Tzu-Hsi Huang, Tsan-Yao Chen	Shih-Han Wang	Tsan-Yao Chen	National Tsing Hua University
A-P-215	Fabrication and Performance Optimization of PZT Thin-Film Ultrasonic Sensing Chips on Silicon Substrates	SHIEH,TING-HENG, SHAO-RUEI YANG, CHIN-CHI CHENG, HSIANG CHEN, Makiko Kobayashi	SHIEH,TING-HENG	HSIANG CHEN	National Chi Nan University
A-P-238	Wireless Integrated Perovskite-Photoelectrochemical Water Splitting for Bias-Free Artificial Leaf Hydrogen Production	Yu-Chen Huang, Cheng-Hsu Ko, Shih-Han Huang, Chih-Chien Lee, Shao-Sian Li, Shun-wei Liu, Yu-Ching Huang	Yu-Chen Huang	Yu-Ching Huang	National Taiwan University of Science and Technology
A-P-239	The Synergetic Collaboration Between Pd and Locally Tetrahedrally-Coordinated Ni Oxide Significantly Enhances the Efficiency of CO ₂ Thermal Methanation	Tsan-Yao Chen, Che Yan, Fa-Chih Pai	Fa-Chih Pai	Fa-Chih Pai	National Tsing Hua University
A-P-242	Magnetron Sputtered Binder-Free Mo ₂ N-Carbon Composite Films for High-Performance Flexible Supercapacitors	Nikita Yadav, Wei-Chun Cheng, Chao-Kuang Wen, Bo-Chen Tang, Mani Govindasamy, Sheng-Chi Chen	NIKITA YADAV	Sheng-Chi Chen	National Taiwan University of Science and Technology
A-P-255	High-efficiency hydrogen evolution across universal pH levels is achieved using a PtRh nanocolloid supported on NiO _x	Chien-Yi Liu, Tsan-Yao Chen	Chien-Yi Liu	Tsan-Yao Chen	National Tsing Hua University
A-P-256	Reactive Sputtering of MoO _x on Ni Foam: Influence of Ar/O ₂ Ratio and Post-Annealing on Bifunctional Water Splitting Activity	Meng-Ju Li, Wan-Yu Wu	Meng-Ju Li	Wan-Yu Wu	National United University
A-P-259	MoS ₂ /TiO ₂ /GF was prepared using liquid phase deposition and hydrothermal methods for application in VRFB to enhance efficiency.	Yi-Wen Wu, Jui-Yu Wang, Ying-Rong Ho, Jung-Jie Huang	Yi-Wen Wu	Jung-Jie Huang	Asia University
A-P-269	Investigation of blocking layer effect on the fabrication of SDC-based SOFC	Tai-Nan Lin, Chun-Yen Yeh, Hong-Yi Kuo, Wei-Xin Kao	Tai-Nan Lin	Tai-Nan Lin	National Atomic Research Institute

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A-P-274	Investigation of ZnO-Modified Ag/Carbon Black Cathode Catalysts via Atomic Layer Deposition for Anion Exchange Membrane Fuel Cells	Chih-Yu Chen, Shao-Chuan Chang, Chih-Liang Wang	Chih-Yu Chen	Chih-Liang Wang	National Tsinghua University
A-P-299	Mo-Ni Alloy Thin Film Catalysts Synthesized by Co-Sputtering for Enhanced Hydrogen Evolution Reaction	Zhe-Yu Liu, Wan-Yu Wu	Zhe-Yu Liu	Wan-Yu Wu	National United University
A-P-312	Sustainable Hydrogen Generation Using Biochar Electrodes and Visible-Light-Active ZnS/Cu Nanocrystals	Yu-Ting Chen, Yen-Hsun Su	Yu-Ting Chen	Yen-Hsun Su	National Cheng Kung University
A-P-340	Enhanced harvest of solar energy via the sequential growth and stacking of p-type and n-type nanocrystals on organic semiconductors for photocatalytic hydrogen evolution	Chia I Wu, I Ting Lee, Jr Jeng Ruan	Chia I Wu	I Ting Lee, Jr Jeng Ruan	National Cheng Kung University
A-P-341	Growth and distribution of metal-organic framework crystals within deposited layers of conductive ITO nanoparticles for electrocatalytic oxygen evolution	Wei-Han Lu, Yong-Cing Chen	Wei-Han Lu	Jrjeng Ruan	National Cheng Kung University
A-P-342	Multi-Physical Field Integration in Fe ₃ O ₄ @Au-Porphyrin Composites for Efficient Photocatalytic Water Splitting	Peng-Hsu Lin, Jr-Jeng Ruan	Peng-Hsu Lin	Jr-Jeng Ruan	National Cheng Kung University
A-P-346	Development of 2D Molecular Complex Photocatalysts for Enhanced Hydrogen Evolution via Polarization Engineering	LU, CHENG-YUEH, LI, HSU-CHENG, JUAN, CHIH-CHEN	LU, CHENG-YUEH	JUAN, CHIH-CHENG	National Cheng Kung University
A-P-348	Integrated Approach of Plasma-Treated Copper and Dispersant-Assisted Graphene/Epoxy Composite Coatings for Enhanced Heat Dissipation	Jhao-Yu Guo, Min-Jie Wu, Yi-Hsuan Lu	Min-Jie Wu	Jhao-Yu Guo	Tamkang University
A-P-360	Layered MXene-PEDOT:PSS Films Electropolymerized onto Graphite Felt to Boost VRFB Electrochemical Performance	Bo-Yu Lin, Wan-Rou Liu, Yun-Chu Chen, Chien-Hing Lin, Ting-Yu Liu	Bo-Yu Lin	Ting-Yu Liu	Ming Chi University of Technology
A-P-411	Electro-oxidized WS ₂ /STO Heterostructures for Improved Photoelectrochemical Hydrogen Generation	Tung-Ching Ko	Ko Tung-Ching	Heng-Jui Liu	National Chung Hsing University
A-P-412	Growth of high-quality g-C ₃ N ₄ thin films via CVD and their application in photocatalytic CO ₂ reduction	Li-Ying Lin, Shuo-Yun Chang, Mohammad Qorbani, Li-Chyong Chen, Kuei-Hsien Chen, Cheng-Ying Chen	Li-Ying Lin	Cheng-Ying Chen	National Taiwan Ocean University
A-P-421	Synthesis and characterization of high-entropy ceramics of (Mg _{0.2} Zn _{0.2} Bi _{0.2} Mn _{0.2} Co _{0.2}) ₂ SiO ₄ and (Mg _{0.2} Zn _{0.2} Bi _{0.2} Mn _{0.2} Ni _{0.2}) ₂ SiO ₄	Hsi-Shan Chen, Shao-Ju Shih	Hsi-Shan Chen	Shao-Ju Shih	National Taiwan University of Science and Technology
A-P-437	Electrochemical and Interfacial Contact Resistance Characteristics of TiCN-Coated Titanium Bipolar Plates for PEMFCs	Hyun-Kyu Kyu, Seong-Jong Kim	Seong-Jong Kim	Seong-Jong Kim	Mokpo National Maritime University
A-P-442	Effects of nitrogen flow control on electrochemical characteristics of TiN-coated 316L stainless steel	Dong-Ho Shin, Dae-Mun Kim, Sang-Jun Lee, Seong-Jong Kim	Dong-Ho Shin	Seong-Jong Kim	Mokpo National Maritime University
A-P-451	Engineering MoSe ₂ /Bi ₂ CO ₂ O ₄ Heterostructures via Spin-Coating for Enhanced Electrocatalytic Water Splitting and Urea Oxidation	Kai-Hsuan Lin, Dhanapal Vasu, Liangdong Fan, Te-Wei Chiu	Kai-Hsuan Lin	Te-Wei Chiu	National Taipei University of Technology
A-P-458	Spin-Coated CuGaO ₂ Thin Films for Efficient Photocatalytic Water Splitting and Pollutant Degradation	Yu-Hsiang Chen, Dhanapal Vasu, Yin Shu, Te-Wei Chiu	Yu-Hsiang Chen	Te-Wei Chiu	National Taipei University of Technology

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A-P-459	Multi-Cation $\text{Cu}_2\text{Co}_{0.5}\text{Ni}_{0.5}\text{SnS}_4$ Thin Films: A Novel Quinary Sulfide Catalyst for Energy Conversion Reactions	Tien-Chun Tseng, Dhanapal Vasu, Te-Wei Chiu	Tien-Chun Tseng	Te-Wei Chiu	National Taipei University of Technology
A-P-483	Eco-Friendly $\text{CdS}/\text{Zn}(\text{O,S})/\text{AZO}$ Coatings on CIGSs for Stable Photoelectrochemical Performance: XANES Characterization of Interface Chemistry and Defect Passivation	Tsung-Yen Tsai, Tzu-Ying Lin	Tsung-Yen, Tsai	Tzu-Ying Lin	National Tsing Hua University
A-P-484	Fabrication of Ni-Mo-Based Thin-Film Electrodes by RF-Magnetron Sputtering for Efficient Hydrogen Evolution Reaction	Yu-Siung Huang, Hao-Ping Huang, Quoc-Nam Ha, Dong-Hau Kuo	Yu-Siung Huang	Dong-Hau Kuo	National Taiwan University of Science and Technology
A-P-488	Effects of Vacuum and Reductive Annealing on the Photoelectrochemical Performance of TiO_2/TIN thin films Deposited by Air-based Sputtering	Chia-Hua Yang, Fu-Hsing Lu	Chia-Hua Yang	Fu-Hsing Lu	National Chung Hsing University
A-P-489	Effects of TIN Thickness on the Photoelectrochemical Response of $\text{SrTiO}_3/\text{TiO}_2/\text{TIN}$ Thin Films Synthesized by a Hydrothermal-Galvanic Couple Method with Reductive Annealing	Yi-Ting Chen, Fu-Hsing Lu	Yi-Ting Chen	Fu-Hsing Lu	National Chung Hsing University
A-P-492	Electrodeposition of $\text{Pd}/\text{Poly}(3,4\text{-ethylendioxythiophene})$ Composite Films as Photoanodes for Photoelectrochemical Hydrogen Generation	Yu Zhou, Tomoyuki Kurioka, Chun-Yi Chen, Yung-Jung Hsu, Masato Sone, Satoshi Okamoto, Tso-Fu Mark Chang	Yu Zhou	Yu Zhou	Institute of Science Tokyo
A-P-493	Air-based Sputtering Deposition of Tantalum Oxynitride Thin Films for Visible-Light Photocatalysis Evaluations	Yu-Wei Su, Fu-Hsing Lu	Yu-Wei Su	Fu-Hsing Lu	National Chung Hsing University
A-P-495	Conductive TIN Underlayer-Dependent Charge Separation in $\text{SrTiO}_3/\text{TiO}_2$ Heterostructure Films for PEC and Photocatalysis by a Hydrothermal-Galvanic Couple Method with Reductive Annealing	Yu-Bo Tsai, Fu-Hsing Lu	Yu-Bo Tsai	Fu-Hsing Lu	National Chung Hsing University
B-P-18	The Fe/Al-based nucleation layer effects on magnetic properties and microstructure of FePt films	Chien-Yu Kuo, Cheng-Yu Tsai, Mau-Tin Lin, Wen-Ching Cheng, Hsin-Hau Huang, Jai-Lin Tsai	Chien-Yu Kuo	Jai-Lin Tsai	National Chung Hsing University
B-P-56	A novel PDMS/AAO/Al pressure sensor by hybrid triboelectric and capacitive sensing mechanism	Chin-An Ku, Geng-Fu Li, Chia-Wei Hung, Chen-Kuei Chung	Chen-Kuei Chung	Chen-Kuei Chung	National Cheng Kung University
B-P-58	Fabrication and Morphological Tuning of Al Nanotriangle arrays via Nanosphere Lithography	Taisei Kumeta, Fuya Okuda, Takayuki Kiba, Midori Kawamura, Junichi Takayama, Satoshi Hiura and Akihito Murayama	Taisei Kumeta	Takayuki Kiba	Kitami Institute of Technology
B-P-61	Development of Nanocrystalline Silicon EGFET for pH Sensing Applications via R-ALiJE Fabrication Process	Yan-Zhang Yu, Jie-Yang Chen, Bo-Yi Syu, Yong-Kun Pan	Yan-Zhang Yu	Yan-Zhang Yu	National Kaohsiung University of Science and Technology
B-P-70	Broadband Photodetectors Enabled by ZnO Nanorod/ Y-doped ZrO_2 Structures	Cheng-Shan Chen	Cheng-Shan Chen	Hsiang Chen	National Chi Nan University
B-P-87	Photocatalytic Material for Solar Hydrogen Production Based on Biochar with Quasi-Quantum Well Structure	Ke-Hsin Chen, Yen-Hsun Su	Ke-Hsin Chen	Yen-Hsun Su	National Cheng Kung University

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B-P-91	Magnetostriction and magnetic properties of sputtered $Fe_{100-x}M_x$ (M=V and Cr) films.	M. C. Wu, S. U. Jen, W. C. Chang, H. W. Chang	Min-Chi Wu	M. C. Wu	National Chung Cheng University
B-P-92	Enhancement of TENG output performance using a novel bilayer triboelectric nanocomposite film with $P25 TiO_2$ -doped PDMS	Chia-Wei Hung, Tzu-Hsuan Lin, You-Jun Huang, Chen-Kuei Chung*	Chen-Kuei Chung	Chen-Kuei Chung	National Cheng Kung University
B-P-93	Enhancement of PDMS-Al TENG performance using repeatable rapid AAO barrier mold and polymer casting	Chia-Wei Hung, Chin-An Ku, Yi-Hsuan Wu, Chen-Kuei Chung	Chia-Wei Hung	Chen-Kuei Chung	National Cheng Kung University
B-P-95	Optical Characteristics of Metal Nanohole Arrays Using Electron Beam Lithography with Character Projection	Keisuke Ikeda, Takayuki Kiba, Midori Kawamura and Akio Higo	Keisuke Ikeda	Takayuki Kiba	Kitami Institute of Technology
B-P-117	Cation-Doped $CuInS_2$ Quantum Dots Treated by High-Sulfur-Pressure Annealing for Mid-Gap Suppression and Photovoltage Enhancement	Li-Lun Chen, Yen-Hsun Su	Li-Lun Chen	Yen-Hsun Su	National Cheng Kung University
B-P-165	Microwave Plasma-Enhanced ALD of High-Quality Al_2O_3 Films on 12-Inch Wafers for Advanced Dielectric Applications	Yu-Quan Zhu, Zhi-Xuan Zhang, Jin-Bao Liu, Jing Zhang, Chia-Hsun Hsu, Neng Wan, Shui-Yang Lien	Yu-Quan Zhu	Shui-Yang Lien	Xiamen University of Technology
B-P-188	$Ti_3C_2T_x$ MXene-Modified PBG Scaffolds: Tailoring Conductivity and Mechanical Properties of Electroactive Polypeptide Composites	Yu-Yuan Ku, Tsui-Yun Chung, Wen-Han Tsao, Meng-Fang Lin, Po-Chun Chen, Yu-Ching Huang	Yu-Yuan Ku	Po-Chun Chen, Yu-Ching Huang	National Taipei University of Technology
B-P-190	Amperometric detection of 4-NQO and H_2O_2 using the doped- Ni_3N deposited ITO electrode	Nishchal Pardhi, Min Chen Chuang, Wei-Chun Cheng, Sheng-Chi Chen, Hui Sun, Mani Govindasamy	Nishchal Pardhi	Sheng-Chi Chen	National Taiwan University of Science and Technology Ming Chi University of Technology
B-P-200	Effects of Ti Interlayer on the Stress and Energy Relief of $TiN/Ti/TiN$ Multilayer Thin Films	I-Sheng Ting, Jia-Hong Huang	I-Sheng Ting	Jia-Hong Huang	National Tsing Hua University
B-P-201	Ab-initio Investigation of Interfacial Energies in 2D Layered Bi_2O_2X (X = Se, S, and Te)(001)/ $SrTiO_3$ (001) Heterostructures	Chun-Che Lee, Sheng-Fang Huang, Yan-Cheng Lin, Wen-Ding Wei, Po-Liang Liu	Wen-Ding Wei	Po-Liang Liu	National Chung Hsing University
B-P-216	Effect of Pulse Width in High-Power Impulse Facing Target Sputtering on Tungsten Oxide Films for Hydrogen Gas Sensing	Yoji Yasuda, Syuya Kaneko, Yuki Imaizumi	Yoji Yasuda	Yoji Yasuda	Tokyo Polytechnic University
B-P-217	Carbonization of Nickel hydroxide nano hexagonal platelets for the improvement of water splitting	Jia-An Chou, Yu-Hsiang Cheng, Jeng-Yu Lin, Chien-Kuo Hsieh	Jia-An Chou	Chien-Kuo Hsieh	Ming Chi University of Technology
B-P-219	Performance enhancement of ZnO gas sensors via surface modification with silver	Yen-Wei Chen Zong-Ying Shen, Jun-Ting Wang, Ray-Hua Horng, Jinn P. Chu	Yen-Wei Chen	Jinn P. Chu	National Taiwan University of Science and Technology
B-P-221	Thickness Ratio-Dependent Microstructure, Mechanical Properties, and Residual Stress Measured by FIB-DIC in $Cu/Zr_6Cu_{24}Ti_7$ Bilayer Thin Films by High-Power Magnetron Pulsed Sputtering	Chun-Heng Wei, Kai-An Yang, Ren-Jie Wu, Ming-Tzer Lin	Chun-Heng Wei	Ming-Tzer Lin	National Chung Hsing University
B-P-236	Recyclable $TiO_2@Fe_3O_4@Ag$ Nanostructures with Integrated SERS Detection, Photocatalytic Activity, and Magnetic Recovery	Chi-Chieh Huang, Ruo-Yu Lee, Kuan-Syun Wang, Ting-Yu Liu	Huang, Chi-Chieh	Ting-Yu Liu	Ming Chi University of Technology

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B-P-241	Enhanced Photocatalytic CO ₂ -to-Methanol Conversion Using Amine-loaded CuO/ZnO Catalysts on 3D Metallic Nanotube Array Substrate	Hsiang-Heng Shih, Minale Belay Getahun, Shibiru Yadeta Ejeta, Toyoko Imae and Jinn P Chiu	Hsiang-Heng Shih	Jinn P Chiu	National Taiwan University of Science and Technology
B-P-247	Micro/submicro/nano-textured CaTiO ₃ coating on low-modulus Ti-13Nb-7Sn-4Mo alloy using oyster shell-derived calcium for improved bioactivity	Hsueh-Chuan Hsu, Shih-Ching Wu, Shan-Chu Yu, Zhong-Xin Chen, Wen-Fu Ho	Zhong-Xin Chen	Wen-Fu Ho	National University of Kaohsiung
B-P-261	Study on the Preparation of WS ₂ /MXene for supercapacitors by High Pressure Hydrothermal Method	Yuan-Hsin Cheng, Ying-Rong Ho, Jung-Jie Huang	Yuan-Hsin Cheng	Jung-Jie Huang	Asia University
B-P-266	Crystal polarity control of ZnO films with a nitrogen pretreatment by plasma-enhanced chemical vapor deposition	I-Ang Chang, Zhong-Xin Lin, Da-Hua Wei	I-Ang Chang	Da-Hua Wei	National Taipei University of Technology
B-P-277	Emission Enhancement in Ag Nanocube-Based Nanogap Structures	Yua Imai, Yuto Masuda, Takayuki Kiba, Midori Kawamura	Yua Imai	Takayuki Kiba	Kitami Institute of Technology
B-P-278	Synthesis of WSe ₂ Monolayer under Varied Temperatures and Annealing Conditions	Kun-An Chiu, Hua-Lin Chen, Wei-Lin Wang, Hung-Pin Chen, Wei-Chun Chen, Yu-Wei Lin, Fong-Zhi Chen	Ting-En Su	Kun-An Chiu	National Center for Instrumentation Research, National Institutes of Applied Research
B-P-279	Epitaxial Growth of Highly Aligned WS ₂ Flakes on Miscut c-plane Sapphire Substrates	Yu-Ching Liao, Kun-An Chiu, Hua-Lin Chen, Wei-Lin Wang, Hung-Pin Chen, Wei-Chun Chen, Yu-Wei Lin, Fong-Zhi Chen	Yu-Ching Liao	Kun-An Chiu	National Center for Instrumentation Research, National Institutes of Applied Research
B-P-281	Electrochemical Performance Analysis of MoS ₂ and Nitrogen-Doped Nanodiamond Composite Nanostructures for Supercapacitor Applications	Bohr-Ran Huang, Li-Hsun Chang, Po-Wen Cheng, Yu-Li Ruan	Bohr-Ran Huang	Bohr-Ran Huang	National Taiwan University of Science and Technology
B-P-284	High-Rate Deposition of Transparent Al ₂ O ₃ Films by Reactive HiPIMS in Transition Mode	Jin-Yu Shih, Hung-Pin Chen, Wei-Chun Chen, Yu-Wei Lin	Jin-Yu Shih	Jin-Yu Shih	National Center for Instrumentation Research
B-P-293	Surface Modification of High Density Polyethylene Chemical Container by Atmospheric Pressure Plasma Technique	Zhen-Gui Yang, Tzu-Hsiu Hung, Heng-Yi Chang, and Li-Chun Ho, Fan-Bean Wu	Zhen-Gui Yang	Fan-Bean Wu	National United University
B-P-300	Bioinspired Cactus Spine-Like Self-Driven Microfluidic SERS Platform with Electrically Stimulated Bacteria for Microbial Detection	You-Yu Liao, Chia-Hsien Lin, Chi-Chieh Huang, Yong-Yi Lo, Yu-Xiang Wang, Kuan-Syun Wang, Yung-Hsin Cheng, Ting-Yu Liu	You-Yu Liao	Ting-Yu Liu	Ming Chi University of Technology
B-P-305	Free-standing heterostructured CoS-MoS ₂ for High-Performance Supercapacitors	Pei-Syuan Lee, Jeng-Yu Lin, Chien-Kuo Hsieh, Horng-Yi Juan	Pei-Syuan Lee	Horng-Yi Juan	Ming Chi University of Technology
B-P-318	Large-Area Growth of 2D Molybdenum Nitride: LPCVD synthesis and Electrical Transport Properties Study	Sheng-Kuei Chiu, Bo-Cyuan Lin	Sheng-Kuei Chiu	Sheng-Kuei Chiu	National University of Tainan

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B-P-324	Optimization of Annealing Conditions for Fabricating Ag/WO ₃ /Ag Plasmonic Nanocavity Structures	Shota Takahashi, Yusuke Takahashi, Sheng Peng, Takayuki Kiba, Midori Kawamura.	Shota Takahashi	Takayuki Kiba	Kitami Institute of Technology
B-P-337	Low-Friction and Wear-Resistant Mo-Cu-X Nanocomposite Coating for High-Performance Electric Vehicle Drivetrain Components	Yoon Hae Won, Kim Jee Woo, Kim Nayeong, Moon Kyoung Il	Yoon Hae Won	Yoon Hae Won	Korea Institute of Industrial Technology
B-P-338	Low-Friction and Wear-Resistant Properties of Nanocomposite Coatings for High-Performance Mechanical Components	Yoon Hae Won, Choi Yu Ri, Son Seok Won	Yoon Hae Won	Son Seok Won	Korea Institute of Industrial Technology
B-P-382	CoSe nanosheet array converted from Co-based MOF for the fabrication of hybrid supercapacitor	Chun-Hsien Wu, Jia-An Chou, Yu-Hsiang Cheng, Jeng-Yu Lin, Chien-Kuo Hsieh	Chun-Hsien Wu	Chien-Kuo Hsieh	Ming Chi University of Technology
B-P-388	Characterization on Multi-metallic Copper-Manganese-Cobalt Oxide Thin Films Prepared by a Solution Processing	Nguyen Van Loi, Pham Duc Anh, Dinh The Nam, Bui Nguyen Quoc Trinh	Bui Nguyen Quoc Trinh	Bui Nguyen Quoc Trinh	Vietnam National University, Hanoi
B-P-408	Dual-Functional SmWO ₃ @S-F-g-C ₃ N ₄ Nanocomposite for Efficient Electrochemical Sensing and Visible-Light-Driven Photodegradation of the Fungicide Carbendazim	Vijayalakshmi Pandurangan, Surya Rajendran, Subramanian Sakthimathan, Poovan Sharmugavelan, Te-Wei Chiu	Vijayalakshmi Pandurangan	Te-Wei Chiu	National Taipei University of Technology
B-P-467	Study of the Micromechanical Properties of Synthetic Mica under Various Stress Angles via Nanoindentation	Shou-Yi Chang	Yu Hao Tu	Ying-Hao Chu	National Tsing Hua University
B-P-477	Ultrasound Phosphate-Coated Soft Magnetic Composites for Power Inductors	Cheng Hsien Yeh, Guan-Wei Fan, Hsuan-Ta Wu, Chuan Feng Shih	Cheng-Hsien Yeh	Cheng-Hsien Yeh	National Cheng Kung University
B-P-482	Oxidation-induced superelasticity in metallic glass nanotubes	Jinn P. Chu, Niklas Bönnhoff, Tinghao Chang, Fucheng Li, Zhibo Zhang, Wenqing Zhu, Tianyu Wang, Minhyuk Park, Jingyang Zhang, Xiaobin Feng, Hongti Zhang, Jianguo Wang, Junhua Luan, Xiaodi Liu, Yang Lu, Yong Yang	Pi, Ya-wen	Jinn P. Chu	National Taiwan University of Science and Technology
B-P-490	Tunable hydrophilicity in a surface nano-textured stainless steel thin film deposited by DC magnetron sputtering	Hsuan-Lun Huang, Fakman Yiu, Jhen-De You, Sung-Tsun Wang, Jinn P. Chu	Hsuan-Lun Huang	Jinn P. Chu	National Taiwan University of Science and Technology
B-P-496	Designing Plasmonic Au@CdS Yolk@Shell Nanostructures for Enhanced Photocatalysis	Jung-Hoe Her, Hsuan-Hung Kuo, Yung-Jung Hsu, Tso-Fu Mark Chang, Masato Sone, Chun-Yi Chen	JUNGHOE HER	JungHoe Her	Institute of Science Tokyo
B-P-497	Annealing-manipulated Electrochemical and Electrochromic Properties of IrO _x Nanofibrous Films	Wei-Yun Huang, Yu-Jen Tao, Munchaporn LARPPRASOETKUL, Veronica Zhanga, Sairwan NAWALERTPANYA, Panchan SRICHAROON, Po-Chun Chen	Wei-Yun Huang	Po-Chun Chen	National Taipei University of Technology
C-P-28	Selective NbO _x CERAM Devices for Reliable Switching Characteristics: Roles of Oxygen Stoichiometry	Mingi Choe, Seung-Min Lee, and Nam-Hoon Kim	Mingi Choe	Nam-Hoon Kim	Chosun University

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	Seung-Min Lee, Mingi Choe, and Nam-Hoon Kim	Nam-Hoon Kim	Chosun University
C-P-29	Effect of Rapid Thermal Annealing-induced Crystallization on Resistive Switching in NbO _x CBRAM	Seung-Min Lee	Chosun University
C-P-31	Synthesis of N-doped DLC by photoemission-assisted plasma CVD: Dependence on discharge mode	Shuichi Ogawa	Nihon University
C-P-33	A novel copper-rhodium alloy thin film with low resistance	Chon-Hsin Lin	Lunghwa University of Science and Technology
C-P-35	Magnetic and Leakage Current Characteristics of Transferred CoFe ₂ O ₄ /BiFeO ₃ Thin Films	Dong Hun Kim	Myongji University
C-P-38	Comparative Study of Selective Wet and Dry Etching of Boron-Doped SiGe Layers for Multistacked Memory Device	Joosung Kang	Yonsei University
C-P-49	Sputter-Deposited α -MoO ₃ Interlayers for van der Waals Epitaxy and Film Transfer	Yeomin Yoon	Myongji University
C-P-57	Oxygen-Free Sputtering of Co ₃ O ₄ on Si (100): Crystallinity Enhancement and Resistive Switching for Memory Applications	Yu-Chieh Tseng	National University of Kaohsiung
C-P-78	Influence of oxygen partial pressure and stacking sequence on the structural and electrical properties of NiO/Ga ₂ O ₃ heterostructures on Si substrates	Shu-Cyuan Wu	National University of Kaohsiung
C-P-85	Engineering tunable resistive and rectifying behaviors in Co ₃ O ₄ /Ga ₂ O ₃ bilayer heterostructures via stacking order and oxygen partial pressure control	Chii-Zen Yu	National University of Kaohsiung
C-P-86	Effect of Annealing Temperature on the Electrical Properties of CaTiO ₃ /Si MOS Structures Prepared by Liquid Phase Deposition	ZIH-CHUN SIE	National Kaohsiung University of Science and Technology
C-P-98	Structure and resistivity size effect of sputter-deposited TiSi ₂ , CoSi ₂ , and NiSi	Jau-Shiung Fang	National Formosa University
C-P-99	Multifunctional Al/ β -Ga ₂ O ₃ /Si (100) hetero-structural film devices exhibiting diode-like rectification and resistive switching behaviour	Cheng-Yen Hu	National University of Kaohsiung
C-P-101	Dual-functional Al/NiO/Si (100) heterostructures exhibiting resistive switching and diode-like behavior for non-volatile memory applications	Xiang-Wei Xia	National University of Kaohsiung
C-P-102	Self-saturated deposition and etching in atomic-scale (SIDEA) process demonstrated by self-saturation oxidation and etching behavior of molybdenum oxides with ozone and water	Chaeyeong Hwang	Kyunghee University
C-P-108	Doped NaNbO ₃ Composite Alginate-Based Aerogels to Enhance Photocatalytic Activity	Po-Kai Chen	National Cheng Kung University
C-P-109	Tailoring 2D Ruddlesden-Popper Perovskites through B-Site Manganese Substitution for Photoelectrochemical Hydrogen Evolution	Chia-Yu Wu	National Cheng Kung University

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C-P-115	Enhancing electrical properties of TiO ₂ dielectric thin films via Sc doping for next-generation DRAM capacitor	Seungwoo Lee, Soo Min Yoo, Chaeyeong Hwang, Gaoul Kim, Beomseok Ryu, Hanbyul Kim, Hansol Oh, Yongroo Park, and Woojin Jeon	Seungwoo Lee	Woojin Jeon	Kyung Hee University
C-P-119	Robust cobalt alloy interconnects: Perspective from breakdown voltage and time-dependent-dielectric-breakdown characteristics	Yen-Jui Chen, Zheng-Yao Hong, Zhong-Chen Zhang, Po-Yu Tseng, Yi-Lung Cheng	Yen-Jui Chen	Yi-Lung Cheng	National Chi-Nan University
C-P-120	P-type Nitrogen-doped Ga ₂ O ₃ by High-Throughput Co-injection Spatial Atomic Layer Deposition	Hang Yu, Chao-Fan Xia, Xin-Fa Chen, Chia-Hsun Hsu, Wan-Yu Wu, Dong-Sing Wu, Chao-Nan Chen, Shui-Yang Lien	Hang Yu	Chia-Hsun Hsu, Shui-Yang Lien	Xiamen University of Technology
C-P-128	Synthesis of two-dimensional WS ₂ by chemical vapor deposition using WF ₆ and H ₂ S as the precursors	Shu-Han Chen, Yu-Chuan Lin	Shu-Han Chen	Yu-Chuan Lin	National Yang Ming Chiao Tung University
C-P-153	Atomic Layer Deposition of Lanthanum Oxide Using New La precursors	Seungmin Han, Jinhyung Park	Seungmin Han	Jinhyung Park	Air Liquide
C-P-158	Growth of 2D WS ₂ by Gas-Flow Enhancement in Vapor Phase Transport	Wei-Lin Wang	Wei-Lin Wang	Wei-Lin Wang	National Center for Instrumentation Research
C-P-159	Scalable MOCVD Growth of 2D WS ₂ Film on 4-inch Sapphire Wafers	Wei-Lin Wang	Wei-Lin Wang	Wei-Lin Wang	National Center for Instrumentation Research
C-P-161	Study of Temperature-Dependent Heteroepitaxial Growth of β -Ga ₂ O ₃ Nucleation Layers on c-Al ₂ O ₃ by MOCVD	Wei-Chun Chen, Wei-Lin Wang, Kun-An Chiu, Hung-Pin Chen, Yu-Wei Lin, Fong-Zhi Chen	Wei-Chun Chen	Wei-Chun Chen	National Institutes of Applied Research
C-P-162	Impact of Via Pitch on the Electrical Characteristics of Through-Ceramic Via Structures in AlN Substrates	Sheng-Hong Wang, Cheng-Chun Lin, Kuan-Chieh Lee, Wan-Ching Chiang, Hao Wang, Hsin-Yu Tseng, Yi-Le Liao, Sea-Fue Wang, Kuo-Kwang Chao, Hsiao-Hsuan Hsu	Sheng-Hong Wang	Hsiao-Hsuan Hsu	National Taipei University of Technology
C-P-164	Plasma-Power-Dependent Densification and Optical Properties of Conformal MgF ₂ Antireflection Coatings Prepared by PEALD	ZhiXuan Zhang, ShuiYang Lien	ZhiXuan Zhang	ShuiYang Lien	Xiamen University of Technology
C-P-169	Characterization of Amino-terminated Self-Assembled Monolayer on Cu/Porous low-k Dielectrics	Zhong-Chen Zhang, Po-Yu Tseng, Yen-Jui Chen, Zheng-Yao Hong, Yi-Lung Cheng	Zhong-Chen Zhang	Yi-Lung Cheng	National Chi-Nan University
C-P-175	Characterization of Gallium Nitride Thin Films Grown on Tungsten Disulfide by Molecular Beam Epitaxy	Tang-Chin Lo	Tang-Chin Lo	Ing-Song Yu	National Dong-Hwa University
C-P-193	Enhanced Physical Properties of Magnetron Sputtered Ga ₂ O ₃ Thin Films via Sn Doping and Their Application in Self-Powered Solar Blind Photodetectors	Xiao-Ying Zhang, Ye-Lan Li, Shui-Yang Lien	Xiao-Ying Zhang	Shui-Yang Lien	Xiamen University of Technology
C-P-194	Dual-Sided TiO ₂ -LiF Multilayer Antireflective Coatings for Enhanced Visible Transparency on Glass Substrates	Wen-Xuan Zhu, Wang Chen, Shui-Yang Lien	Wen-Xuan Zhu	Shui-Yang Lien	Xiamen University of Technology

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C-P-207	Enhanced Antireflection Performance of Glass via Alkaline Treatment and Fluoride Coating Design	Yu-Qi Lin, Shui-Yang Lien	Yu-Qi Lin	Shui-Yang Lien	Xiamen University of Technology
C-P-208	High-Performance Light-Emitting Transistors with 3D Mesh Source Electrodes Fabricated by Electrostatic Field Direct Writing	Yuxin Yang, Qizhen Chen, Shui-Yang Lien	Yuxin Yang	Shui-Yang Lien	Xiamen University of Technology
C-P-223	Ferroelectricity and Endurance Properties of Ferroelectric HfAlO ₂ and HfZrO ₂ Bilayer Stacks	I-Cheng Lin and Hsiao-Hsuan Hsu	I-Cheng Lin	Hsiao-Hsuan Hsu	National Taipei University of Technology
C-P-224	Effect of Remote Plasma Nitridation on Aluminum Oxide Capping Layer of Ferroelectric Capacitor Utilizing Hafnium Aluminum Oxide	Chen-Gui Zheng and Hsiao-Hsuan Hsu	Chen-Gui Zheng	Hsiao-Hsuan Hsu	National Taipei University of Technology
C-P-225	Investigation of Polarization Switching and Endurance in Mixed-Phase Hafnium Zirconium Oxide	Ruo-Yin Liao, Wu-Ching Chou, Hsiao-Hsuan Hsu and Chun-Hu Cheng	Ruo-Yin Liao	Chun-Hu Cheng	National Taiwan Normal University
C-P-226	Improved Endurance Reliability in Ferroelectric and Antiferroelectric HfAlO _x by Interface Engineering	Hsuan-Han Chen, Ruo-Yin Liao, Hsiao-Hsuan Hsu, Wu-Ching Chou and Chun-Hu Cheng	Ruo-Yin Liao	Chun-Hu Cheng	National Taiwan Normal University
C-P-263	Temperature-Dependent Study on Germanium Layers of GeSn/Ge Multiple Quantum Wells Structure by Modulation Spectroscopy	Tzu-Hsiang Ho, Chin-Wen Ruan, Po-Hung Wu, Ing-Song Yu, Kuo-Chih Lee, Hung-Hsiang Cheng	Tzu-Hsiang Ho	Ing-Song Yu	National Dong Hwa University
C-P-265	Optimization of growth conditions for Mg ₃ Bi ₂ thin films for thermoelectric application	Takeru Kuriyama, Akito Ayukawa, Kouki Nejo, Nozomu Kiridoshi, Haruhiko Udono, Shunya Sakane	Takeru Kuriyama	Shunya Sakane	Ibaraki University
C-P-267	Epitaxial Growth and Characterization of High-quality Mg ₃ Sb ₂ and Mg ₃ Bi ₂ Thin Films for Thermoelectric Applications	Akito Ayukawa, Takeru Kuriyama, Koki Nejo, Wakaba Yamamoto, Akira Yasuhara, Haruhiko Udono, Shunya Sakane	Akito Ayukawa	Shunya Sakane	Ibaraki University
C-P-271	Introduced EtOH as a pre-reduction agent of molybdenum dioxide electrodes for enhanced electrical properties based on X-ray analysis	Seungwoo Lee, Chaeyong Hwang	Soo Min Yoo	Woojin Jeon	KyungHee University
C-P-275	Ambient Sequential Deposition Perovskite Solar Cells via Co-Solvent Engineering	Pin-Hao Chao, Chia-Feng Li, Shih-Han Huang, Hou-Chin Cha, * and Yu-Ching Huang	Pin-Hao Chao	Yu-Ching Huang	Ming Chi University of Technology
C-P-280	Effect of Annealing Temperature on the Structural and Photodetection Properties of Zinc Gallium Oxide with Boron Carbide and Boron Nitride Composite Films	Bohr-Ran Huang, Chih-Wei Huang, Li-Hsueh Wu	Bohr-Ran Huang	Bohr-Ran Huang	National Taiwan University of Science and Technology
C-P-290	Study on the growth mechanism of WS ₂ and WSe ₂ epitaxial crystals using MOCVD	Cheng-Dian Yan, Kun-An Chiu, Wei-Chun Chen, Yu-Wei Lin	Cheng-Dian Yan	Yu-Chuan Lin	National Yang Ming Chiao Tung University
C-P-292	Influence of Plasma Power on the properties of AlF ₃ antireflective films prepared by plasma-enhanced atomic layer deposition	Jing Zhang, Chia-Hsun Hsu, Shui-Yang Lien	Jing Zhang	Shui-Yang Lien	Xiamen University of Technology

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C-P-294	Large-Area, Continuous Hexagonal Boron Nitride Films Prepared by Magnetron Sputtering and Post-Annealing	Tzu-Hao Lin, Yu-Chuan Lin, Chao-Te Lee, Wei-Chun Chen	Tzu-Hao, Lin	Yu-Chuan Lin	National Yang Ming Chiao Tung University
C-P-306	Controlled Nickel Doping in Ga ₂ O ₃ Thin Films via Alternating Dual-Target Sputtering: Structural and Electrical Properties	Ruo-Yan Huang, Jia-Qi Xu, Zong-Yue Li, Haixiang Huang, Haoxuan Ding, Yiming Tao, Shui-Yang Lien, Pao-Hsun Huang, and Yaoqi Ke	Ruo-Yan Huang, Yaoqi Ke	Pao-Hsun Huang	Jimei University
C-P-309	Effect of Acceptor LUMO Levels on the Performance of Photomultiplication-Type Organic Photodetectors	Hong-Yu Chen, Chih-Chien Lee, Zhi-Hao Huang, Fu-Zong Liu, Shun-Wei Liu, Yu-Ching Huang	Hong-Yu Chen	Yu-Ching Huang	National Taiwan University of Science and Technology
C-P-321	Investigation of the effect of doping effect of organic solvent vapour transport and noise characteristics of graphene field effect transistors.	Ondřej Šik, Petr Sedláč, Robert Maeků, Nikola Papež	Ondřej Šik	Ondřej Šik	Brno university of technology
C-P-335	Understanding the growth mechanisms of epitaxial MoS ₂ on sapphire	Zih-Syun Shen, Tzu-Hsuan Yu, Cheng-Dian Yan, Kun-An Chiu, Wei-Chun Chen, Yu-Wei Lin, Fong-Zhi Chen, Shu-Jui Chang, Yu-Chuan Lin	Zih-Syun Shen	Yu-Chuan Lin	National Yang Ming Chiao Tung University
C-P-336	Tuning the surface morphology and wettability of ZnO nanostructures via the hydrothermal method	I-Ang Chang, Da-Hua Wei	I-Ang Chang	Da-Hua Wei	National Taipei University of Technology
C-P-339	Dependence of Growth Temperature on Characteristics of MOCVD s-Ga ₂ O ₃ Films for Deep Ultraviolet Photodetectors	Tsai-Yun Chang, Chih-Hung Chien, Wen-Hao Lee, Tung-Han Wu, Po-Kai Kung, Hsin-Yu Chou, Wei-Hsiang Chiang, Anoop Kumar Singh, Po-Liang Liu, Dong-Sing Wu	Tsai-Yun Chang	Dong-Sing Wu	National Chung Hsing University
C-P-350	Analysis of self heating effect in GAAFET with different parasitic channel thicknesses at the 3nm node by TCAD simulation	Hsu-Jui Chen, Bo-Ru Huang, Shu-Tong Chang	Hsu-Jui Chen	Shu-Tong Chang	National Chung Hsing University
C-P-351	Band Structure and Carrier Mobility of Monolayer Germanane: A First-Principles Study	Yan-Hsin Lin, Kai-Wei Huang, Shu-Ting Chang	LIN YAN HSIN	Shu-Ting Chang	National Chung Hsing University
C-P-370	Study on the Chemical, Structural, and Optical Properties of TiN Films Prepared by Novel MPALD at Different Substrate Temperatures	Zong-Yue Li	Zong-Yue Li, Yaoqi Ke	Pao-Hsun Huang	Jimei University Xiamen Jingmai Technology Co., LTD
C-P-384	Reduction of C54 TiSi ₂ formation temperature via the epitaxial effect of MoSi _x	Jiwan Hong	Yoon	Woojin Jeon	KhyungHee University
C-P-415	Enhanced Triboelectric Performance of MoO _{3-x} /PVDF-HFP Nanofiber TENGs via Atomic Layer Deposition	Feng-Xiang Yeh, Jun-Jie Zhang, Meng-Fang Lin, Po-Chun Chen	Feng Xiang Yeh	Meng-Fang Lin	National Taipei University of Technology
C-P-416	Interfacial Dipole Engineering Enables High-Efficiency Perovskite Solar Cells with Non-Fullerene Electron Transport Layers	Wen-Ting Li, Shih-Han Huang, Yu-Ching Huang	Wen-Ting Li	Yu-Ching Huang	Ming Chi University of Technology

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C-P-418	Formation of NiSi films and the Effects of Patterned Embedded AZO Films on Optical and Electrical Properties	Yi-Yen Chen, Chia-Hsun Chen, Shu-Bai Liu, Cheng-Chia Chien, Jau-Shiung Fang, Ting-Kan Tsai	Cheng-Chia Chien	Yi-Yen Chen	National Formosa University
C-P-425	High-Coercivity CeCo Thin Films Fabricated by DC Sputtering	Cheng-Yan Lee, I-Hsuan Li, Yi-Le Liao, Yung-Fu Hsu, Sea-Fue Wang, Aidan An-Cheng Sun	I-Hsuan Li	Aidan An-Cheng Sun	National Taipei University of Technology
C-P-432	Fabrication of Large-Scale Single-Crystal Copper Foils with Atomic-Scale Flatness via Muscovite-Assisted Method	Tzu-Ming Chan	Tzu-Ming Chan	Ying-Hao Chu	National Tsing Hua University
C-P-433	Modulation of Bi ₂ O ₃ Se and its heterogeneous integration with silicon substrate	Wei-Ting Chen	Wei-Ting Chen	Ying-Hao Chu	National Tsing Hua University
C-P-439	Transferred High-Crystallinity Thin Films onto Gelatin Substrates via Mica Delamination for Flexible and Biodegradable Electronics	Tsai-Jou Chuang, Shiuan Wu, Ying-Hao Chu	Tsai-Jou Chuang	Ying-Hao Chu	National Yang Ming Chiao Tung University
C-P-440	Effect of Sapphire Substrate Orientation on the Crystal Structure and Electrical Properties of Mg ₂ Bi ₂ Thin Films	Kouki Nejo	Kouki Nejo	Shunya Sakane	Ibaraki University
C-P-443	Effects of Ba Substitution on the Properties of La _{1-x} Ba _x CuOSe Thin Films by Post-Selenization Annealing	Chin-Yun Huang, Guan-You Wu, Po-Sheng Chang, Chih-Ning Wu, Guo-Ju Chen	Po-Sheng Chang	Guo-Ju Chen	I-Shou University
C-P-444	Structural Evolution and Electrical Properties of Lightly Doped Co-Cu Alloy Films Deposited by EC-ALD	Jau-Shiung Fang, Wan-Hui Lu, Chun-Chen Lai, Cheng-Da Chung	Jau-Shiung Fang	Jau-Shiung Fang	National Formosa University
C-P-446	Epitaxial 2D Bi ₂ O ₂ Te: An Emerging Material for the Next-Generation Semiconductor Industry	Yu-Ju Lin, Yu-Hao Tu, Pai-Chun Wei	Yu-Ju Lin	Ying-Hao Chu	National Yang Ming Chiao Tung University
C-P-449	Design of Antireflection Coatings for Triple-Junction Solar Cells and Efficiency Enhancement	Chun-Chieh Hsu, Yen-Chang Chen, Chun-Ping Chen, Chan-Peng Chang, Tzu-Huan Cheng	Chun-Chieh Hsu	Tzu-Huan Cheng	LiveStrong Optoelectronics Co., Ltd.
C-P-452	Bi ₂ O ₃ Se /PbHfO ₃ Heteroepitaxy for Antiferroelectric Field-Effect Transistor	Ping-Li Huang	Ping-Li Huang	Ying-Hao Chu	National Tsing Hua University
C-P-455	Electrical and Reliability of Amino-Terminated Self-Assembled Monolayers as Potential Liners for Cobalt Interconnects	Po-Yu Tseng, Zhong-Chen Zhang, Yen-Jui Chen, Zheng-Yao Hong, Yi-Lung Cheng *	Po-Yu Tseng	Yi-Lung Cheng	National Chi-Nan University
C-P-465	Effect of Cu Doping on the Thermal Stability of Ag Films	Yung-Chieh Chou, Yu-Lin Liao, Fan-Yi Ouyang	Yung-Chieh Chou	Fan-Yi Ouyang	National Tsing Hua University
C-P-481	Contact Resistance Improvement of IGZO Devices through the Introduction of a Boosting Technique in the Source/Drain Regions	hyunmin cho	HYEONMIN JO	HYEONMIN JO	SungKyunKwan University (SKKU)
C-P-487	Isoprene Gas Sensing Property of Si-doped Tungsten Oxide Films with Pd Surface Decoration	Yue-Chi Chen, Hai-Yun Chuang, You-Peng Chen, Xiaodong Qi, Liji Huang	You-Peng Chen	Xiaodong Qi	National Cheng Kung University
C-P-494	Air-based Sputtering Deposition of Amorphous WN _x O _y Films for Electrochromic Applications	Yu-Cheng Chang, Fu-Hsing Lu	Yu-Cheng Chang	Fu-Hsing Lu	National Chung Hsing University
D-P-34	Thermal stability, Oxidation Behavior, and Mechanical Properties of AlTiNbSiN and TiAlNbSiN Coatings	Duc Manh Nguyen, Yin-Yu Chang, He-Qian Feng	Duc Manh Nguyen	Yin-Yu Chang	National Formosa University

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D-P-45	Protective Coating of Precious Metal Films on High-melting-temperature Metals by Chemical Vapor Deposition	Hiroki Sato, Takashi Goto, Akira Yoshikawa	Hiroki Sato	Hiroki Sato	Tohoku University
D-P-46	SYNTHESIS OF COPPER-III-TITANIUM CO-DOPED DIAMOND-LIKE CARBON FILMS BY MAGNETRON SPUTTERING	Oskars Platnieks, Luitauras Marcinauskas, Hesar Khaksar, Edgars Vanags, Anatolijs Sarakovskis	Oskars Platnieks	Oskars Platnieks	Kaunas University of Technology
D-P-62	A Comparison on Transition Metal Nitride Coatings Deposited by RFMS and HIPIMS Techniques	G.T. Chou, W.C. Hung, F.B. Wu, C.Y. Chang	G.T. Chou	F.B. Wu	National United University
D-P-65	Effect of Oxygen Content and Thickness on the Structure and Property of ZrN and Zr(O,N) Thin Films	Yi-Cheng Yang, Chi-Feng Hung, Jia-Hong Huang	Yi-Cheng Yang	Jia-Hong Huang	National Tsing Hua University
D-P-77	Characteristics of the S-phase formed on 316L stainless steel surfaces by vacuum nitriding and carburizing	Yuri Choi, Heon Kang, Seok-Won Son	Yuri Choi	Seok-Won Son	Korea Institute of Industrial Technology
D-P-88	The Effects of Composition and Coating Thickness on the Mechanical Properties of TiZrN Coatings	Te-I Huang, Chun-Lin Yang, Jia-Hong Huang	Te-I Huang	Jia-Hong Huang	National Tsing Hua University
D-P-96	Effect of Substrate Bias on the Microstructure and Characteristics of Titanium Diboride Thin Films Deposited by High-Power Impulse Magnetron Sputtering	Jian-Fu Tang, Min-Yi Lin, Yi-Hsiang Yang, Hsiang-Chih Hsiao, Fu-Sen Yang, Chi-Lung Chang	Min-Yi Lin	Chi-Lung Chang	Ming Chi University of Technology
D-P-113	The incorporation of lithium chloride (LiCl) enhances the performance of dehumidification membranes fabricated from PAN/CS composites	Ching-Hsu Yang, Cheng-Fang An, Yuhong Yang, Yi-Hao Cai, Zong-Liang Huang, Ssu-Ting Lin, Jue-Lin Chen, Hsu-Yu Chen, Hong-Ping Cheng, Hsiang Chen, Chin-Chi Cheng, Jing-Yun Wu, Gu-Fan Chen	Cheng-Fang An	Chen Hsiang	National Chi Nan University
D-P-133	Study of Organic/Silica Hydrophobic Composite Layer on Stainless Steel Prepared by Atmospheric Pressure Plasma Jet	Ting Yu Lai, Yu-Lin Kuo, Weu-Mau Hsu, Ching Wen Yu	Ching Wen Yu	Ching Wen Yu	National Taiwan University of Science and Technology
D-P-149	Effects of Metal Interlayers on Residual Stress Relief in γ -Mo ₂ N/Ti and γ -Mo ₂ N/Mo Thin Films	Zi-Rui Huang, Ding-Hsuan Yang, Jia-Hong Huang	Zi-Rui Huang	Jia-Hong Huang	National Tsing hua university
D-P-150	Influence of Cr, Ti, and Zr Auxiliary Targets on the Properties of CrAlN-Based Coatings Deposited by Bipulse-HiPIMS	Ying-Hsiang Lin, Kai-Shawn Tang, Chih-Yen Lin, Yi-Hui Lee, Wan-Yu Wu	Wan-Yu Wu	Wan-Yu Wu	National United University
D-P-173	Effect of Silicon Sputtering Power on the Properties of TaSiN Thin Films	Y.Y. Yao, F.B. Wu	Y. Y. Yao	F.B. Wu	National United University
D-P-187	Electrodeposition of Ni-Mo-W Alloy Coatings Using Sodium Molybdate and Minimal Sodium Tungstate: A Cost-Effective Approach with Enhanced Wear and Corrosion Resistance	Pao-Chang Huang, Meng-Lin Wang, Chih-Cheng Chou	Pao-Chang Huang	Pao-Chang Huang	National Defense University
D-P-203	Wear Behavior of As-Hydrated Zircaloy-4: Role of Hydride Distribution	Cheng-Han Wu, Jun-Xian Lin, Kuan-Che Lan	WU CHENG-HAN	Kuan-Che Lan	National Tsing Hua University
D-P-204	Protective Pyrolytic Carbon Coatings Prepared by RF-Heated Chemical Vapor Deposition	Hiroki Sato, Takashi Goto, Hiroyuki Nishimura, Yasunori Takakuwa, Toshihiro Kaminaga, Akira Yoshikawa	Hiroki Sato	Hiroki Sato	Tohoku University

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D-P-218	Development of a Sequential Treatment Process for Zirconate Conversion Coatings on 7075-T6 Aluminum Alloy	Chia-Hang Tu, Tai-Cheng Chen, Cheng-Han Lin and Chao-Sung Lin	Chia-Hang Tu	Chao-Sung Lin	National Taiwan University
D-P-220	Improving corrosion-wear resistance of HVOF-sprayed Inconel 625 coatings through micro-shot peening treatment	Tai-Cheng Chen, Leu-Wen Tsay, Chau-Chang Chou, Shu-Chi Hsu	Chau-Chang Chou	Tai-Cheng Chen	National Atomic Research Institute
D-P-222	The Effect of Sputtering Deposition on the Creep and Internal Friction Behaviors of Zr-Cu-Based Thin-Film Metallic Glasses Characterized Using Laser Doppler Vibrometry and Bulge Testing	Chun-Heng Wei, Kai-An Yang, Che-Ming Hsieh, Yu-Juan Chen, Ming-Tzer Lin	Chun-Heng Wei	Ming-Tzer Lin	National Chung Hsing University
D-P-234	Effect of Bias Voltage on Ion Energy and Mechanical Properties of Tetrahedral Amorphous Carbon Thin Films Deposited by High-Power Impulse Magnetron Sputtering	Fu-Sen Yang, Yu-Lin Kuo, Chi-Lung Chang	Fu-Sen Yang	Chi-Lung Chang	National Taiwan University of Science and Technology
D-P-235	Plasma Diagnostics and Mechanical Properties of Tetrahedral Amorphous Carbon Thin Films Deposited by High-Power Impulse Magnetron Sputtering with Varying Inert Gas Mixing Ratios	Chi-Lung Chang, Fu-Sen Yang, Yu-Lin Kuo,	Chi-Lung Chang	Chi-Lung Chang	National Taiwan University of Science and Technology
D-P-244	Influence of Substrate Bias on the Microstructural Development and Mechanical Performance of AlCrN and AlCrSiN Thin Films Deposited by Reactive Magnetron Sputtering	Wan-Chang Hsu, Du-Cheng Tsai, Lung-Wei Cheng, Ming-Hua Shiao, Yen-Lin Huang, Fuh-Sheng Shieu	Wan-Chang Hsu	Fuh-Sheng Shieu	National Chung Hsing University
D-P-304	Microstructure and Mechanical Properties of NbN Coatings Deposited by HiPIMS and RFMS Techniques	W.C. Hung, F.B. Wu	W.C. Hung	F.B. Wu	National United University
D-P-330	Effect of Laser Remelting on the Tribology and Corrosion behavior of Arc-Sprayed NiCrMoAl Coatings	Sirinapa Shuecamlue	Sirinapa Shuecamlue	Chaiyasit Banjongprasert	Chiang Mai University
D-P-367	Encapsulation of Flexible Electronics Using HiPIMS/RFMS-Grown AlON/HfO ₂ Multilayers with Superior Moisture Resistance	Li-Chun Chang, Sheng-En Lin, Po-Xiang Tang, Jian-He Wang	Li-Chun Chang	Li-Chun Chang	Ming Chi University of Technology
D-P-369	Adhesion Behavior of Nickel Alloy Coatings Before and After Immersion Test	Arachaporn Srichen, Sirinapa shuecamlue	Sirinapa Shuecamlue	Chaiyasit Banjongprasert	Chiang Mai University
D-P-377	Effects of Substrate Temperature and Substrate Holder Rotation Speed on the Characterization of (TiZrHfCr)B _x Films	Yu-Ting, Ye, Guan-Ting Lu, Li-Chun, Chang, Yung-I, Chen	Yung-I Chen	Yung-I Chen	National Taiwan Ocean University
D-P-434	Mechanical Behavior of Electrochemically Nickel Alloy Deposited Luffa Sponge	Tzu-Hsiu Hung, Kai-Ze Tsai, Hwei-Hsin Po, Fan-Bean Wu	Tzu-Hsiu Hung	Fan-Bean Wu	National United University
D-P-438	Investigation on the Friction and Wear Behavior of CrN-coated Stainless Steel Using Design of Experiments	Hyun-Kyu Hwang, Dae-Mun Kim, Sang-Jun Lee, Dong-Ho Shin, Seong-Jong Kim	Seong-Jong Kim	Seong-Jong Kim	Mokpo National Maritime University
D-P-441	Investigation of electrochemical oxidation treatment to improve corrosion and wear resistance of DLC-coated 316L stainless steel	Dong-Ho Shin, Dae-Mun Kim, Sand-Jun Lee, Seong-Jong Kim	Dong-Ho Shin	Seong-Jong Kim	Mokpo National Maritime University
D-P-462	Effect of MoS ₂ additives on corrosion resistance of Al ₂ TiO ₅ -TiO ₂ plasma electrolytic oxidation coatings	Neng-Kun Cheng, Yu-Lin Kuo, Chaur-Jeng Wang, Chun-An Chen, Chuan-Ming Tseng	Neng-Kun Cheng	Chuan-Ming Tseng	National Taiwan University of Science and Technology
D-P-491	Development of Ti Metallic Glass Thin Films by Low-vacuum Air-based Sputtering	Xin-Xian Yang, Fu-Hsing Lu	Xin-Xian Yang	Fu-Hsing Lu	National Chung Hsing University

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D-P-500	Development of boron carbide coating by the thermal spraying method	Chun-Chiang Huang, Yu-Cheng Hu, Yung-Chin Yang	Yu-Cheng Hu	Yung-Chin Yang	National Taipei University of Technology
D-P-502	Thermal spray coating with ceramic microspheres for acoustic absorption applications	Ting-Ya Chuang, Yi-Chieh Yang, Wei-Hao Lee, Yung-Chin Yang	Yi-Chieh Yang	Yung-Chin Yang	National Taipei University of Technology
D-P-504	Preparation and characteristics of the thermal sprayed thermal barrier coatings	Yu-Ming Liu, Don-Cheng Wu, Yen-Chung Chen, Yung-Chin Yang	Don-Cheng Wu	Yung-Chin Yang	National Taipei University of Technology
D-P-505	Developments of the Slag-Based Geopolymer Coatings by the Flame Spray	I-Mo Huang, Te-Chien Tsou, Wei-Hao Lee, Yung-Chin Yang	Te-Chien Tsou	Yung-Chin Yang	National Taipei University of Technology
E-P-71	Light Sensing Properties of 1,9-bis(2-hexyloxy)bispyrrolo[2,3-f,2',3'-f']trubicene/Zinc Oxide Nanorods Heterostructures	Hui-Ru Wu	Hui-Ru Wu	Hsiang Chen	National Chi Nan University
E-P-110	Enhancing Photosynthetic Carbon Fixation in Plants Using SrAl ₂ O ₄ :Eu,Dy Luminescent Coatings	Chia-Hsiang Lee, Amit Kumar Sharma, Yen-Hsun Su	Chia-Hsiang Lee	Yen-Hsun Su	National Cheng Kung University
E-P-143	Study on the application of multifunctional surface coating on titanium surface to promote tissue regeneration and inhibit oral cancer	Yu-Rou Lin, Chun-Yu Ho, Yen-Wen Huang, Meng Yun Wu, Sheng-Yen Lin, Ying-Sui Sun	Yu-Rou Lin	Ying-Sui Sun	Taipei Medical University
E-P-147	Strontium-Doped BCP Sol-Gel Coating Enhances Osteogenesis on 3D Titanium Implants	Ying-Sui Sun, Kaung Khant Ye Mon, Wei-Jen Chang, Jyh-Wei Lee	Ying-Sui Sun	Ying-Sui Sun	Taipei Medical University
E-P-191	Antibacterial Coating and Raman Enhancing Bio-detection by Conductive Polymer with Graphene Oxide and Silver Nanoparticles	Hsiang-Ting Lan, Ting-Yu Liu, Yu-Xiang Wang, Yu-Zhen Wu, Shih-Hsien Yeh, Mei-Yu Chen, Kuan-Syun Wang	Hsiang-Ting Lan	Ting-Yu Liu	Ming Chi University of Technology
E-P-196	Development and Evaluation of a Durable Anticoagulant Coating on SLM-Fabricated Ti-6Al-4V for Vascular Applications	Jin-Wei Lin, Ming-Ching Ho, Wei-Siang Chen, Chau-Chang Chou	Ming-Ching Ho	Chau-Chang Chou	National Taiwan Ocean University
E-P-212	Functionalization of polymer surfaces by aerosol-assisted deposition using atmospheric plasma	Hua-Ting Hsieh, Taiki Osawa, Kai Fukuchi, Akane Yaida, Yu-Lin Kuo, Akitoshi Okino	Hua-Ting, Hsieh	Akitoshi Okino	Institute of Science Tokyo
E-P-237	Photocatalytic Antibacterial Application of Chlorophyll-Doped Carbon Quantum Dots	Yong-Yi Lo, Yu-Jie Wen, Kuan-Syun Wang, Ting-Yu Liu	Yong-Yi Lo	Ting-Yu Liu	Ming Chi University of Technology
E-P-243	Preparation of Hydrogenated Titanium for Orthopedic Implant Application	Chi-Hsiang Tang, Yun-Ching Sun	Chihsiang Tang	Ren-Jei Chung	National Taipei University of Technology
E-P-254	Bendable iridium oxide-polydopamine composite microelectrodes integrated with a soft electrochemical actuator for optic nerve interface applications	Guei-Jhen Jhang, Sin-Yi Liao, Kuang-Chih Tso, Sunaga Yoshinori, Kiyotaka Sasagawa, Jun Ohta, Po-Chun Chen	Guei-Jhen Jhang	Po-Chun Chen	National Taipei University of Technology
E-P-283	Plasma-Assisted Fabrication and Modification of Organic Thin Films for Biosensor Applications	Pei Chen Wu, Shu Chuan Liao	Pei Chen Wu	Shu Chuan Liao	Tamkang University
E-P-314	Design of Gold Nanoparticles (AuNPs) Embedded Organic Coatings Platforms for Biomedical Applications	Chen-Hung Chan, Shu-Chuan Liao	Chen-Hung Chan	Shu-Chuan Liao	Tamkang University

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E-P-317	Electrochemical Fabrication of a Multifunctional PEDOT:PSS/Carbon Quantum Dot/g-C ₃ N ₄ Composite Coating for Light-Driven Antibacterial and Self-Cleaning Applications	Yu-Xiang Wang, Hsiang-Ting Lan, Kuan-Syun Wang, Ting-Yu Liu	Yu-Xiang Wang	Ting-Yu Liu	Ming Chi University of Technology
E-P-325	Hydrothermal Reduction-Controlled Tuning of Graphene Oxide Coatings on Titanium Bone Screws: Structure, Surface Morphology, and Biomedical Relevance	Yu Lo, Shu-Ting Yeh, An-Cheng Aidan Sun, Chang-Hung Huang, Wei-Ren Liu	Yu Lo	Wei-Ren Liu	Chung Yuan Christian University
E-P-326	Plasma-Polymerized DEODMS and HMDSZ Films with UV-Induced Grafting of Thermosensitive Hydrogels for Lanthanum Chloride -Enhance Antibacterial Stainless Steel	Yin-Lin Wang, Shu-Chuan Liao	Chih-Yun Yeh	Shu-Chuan Liao	Tamkang University
E-P-327	Mechanical Strength and Osteogenic Potential for Medical Metals with Diamond-Like Carbon Surface Coating	Chang-Hung Huang, Ding-Han Wang, Ting-Kuo Chang, Shu-Ting Yeh, Tzu-Chiao Lin, Yung-Chang Lu	Chang-Hung Huang	Yung-Chang Lu	Mackay Memorial Hospital
E-P-329	The Potential of Medical-Grade Titanium Surface Modification for Osseointegration: A Comparison Between Diamond-Like Carbon and Graphene Oxide Coatings	Chang-Hung Huang, Wei-Ren Liu, Yu-Lo, Shu-Ting Yeh, Tzu-Chiao Lin, Yung-Chang Lu	Chang-Hung Huang	Yung-Chang Lu	Mackay Memorial Hospital
E-P-331	TITLE: Electrospun Chitosan/Zein Fibrous Membranes: Fabrication, Characterization, and Potential for Biomedical Applications	Ping Wei Ko	Ping Wei Ko	Shu Chuan Liao	Tamkang University
E-P-364	PROMOTING ANGIOGENESIS AND OSTEOGENESIS WHILE INHIBITING OSTEOCLASTOGENESIS OF POLYETHERKETONE IMPLANT SURFACE THROUGH GRAFTING TYPE I COLLAGEN VIA DIFFERENT NATURAL CROSSLINKERS	Kai-Yi LIN	Kai-Yi Lin	Her-Hsiung Huang	National Yang Ming Chiao Tung University
E-P-375	Plasma-Assisted Growth of Graphene on Stainless Steel for Biofouling-Resistant Interfaces	I-Hsuan Li, Zhi-Yu Jiang, Tzu-Hsuan Hsu, Chien-Shuan Liao, Chao-Nan Lin, An-Cheng Aidan Sun	I-Hsuan Li	An-Cheng Aidan Sun	Yuan Ze University
E-P-389	Experiment of Skin Surface Coating Using Atmospheric Temperature Controllable Plasma	Masaya Tahara, Hua-Ting Hsieh, Ryo Sugiura, Kai Fukuchi, Taiki Osawa, Akane Yaida, Yu-Lin Kuo, Akitoshi Okimo	Masaya Tahara	Akitoshi Okino	Institute of Science Tokyo
E-P-405	Enhancing Biocompatibility of Titanium Implant Surfaces Using an Extracellular Matrix-Mimicking Feature	Yu-Ying Cheng, Her-Hsiung Huang, Chia-Fei Liu, Wei-Cheng Chen	Her-Hsiung Huang	Wei-Cheng Chen	National Yang Ming Chiao Tung University
E-P-406	Nitrogen Plasma Immersion Ion Implantation Enhances Biocompatibility of Zr-based Bulk Metallic Glass Alloy in Dental Implant Applications	Her-Hsiung Huang, Ying-Sui Sun, Hsun-Miao Huang, Wei Zhang, Wei-Cheng Chen	Her-Hsiung Huang	Wei-Cheng Chen	National Yang Ming Chiao Tung University
E-P-409	Design with Functional Coatings by Controlled Surface Mobility in Magnetron Sputtering	Ju-Cheng Li, Pei-Min Chuang, Pakman Yiu	Ju-Cheng Li	Pakman Yiu	Ming Chi University of Technology
E-P-453	Plasma Electrolytic Oxidation of Cu and Pd Nanoparticles with MWCNT-Hydroxyapatite Composite Coatings on Ti-6Al-4V for Enhanced Dental Implants	Mahendran Logesh, Han Cheol Choe	Mahendran Logesh	Han Cheol Choe	Chosun University

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E-P-456	Nanostructured HA/Zn/MWCNT Composite Coatings on Ti-6Al-4V via Plasma Electrolytic Oxidation for Multifunctional Dental Implants	Deepalakshmi Jayakumar, Mahendran Logesh, Han Cheol Choe	Deepalakshmi Jayakumar	Han Cheol Choe	Chosun University
E-P-485	Microfluidic device using metallic nanostructure arrays for the isolation, detection, and purification of exosomes	Guan-Wen Lai, Yu-Sheng Hsiao, Jinn P. Chu	Guan-Wen Lai	Jinn P. Chu	National Taiwan University of Science and Technology
E-P-486	Three-Dimensional Gold Nanowire-Based SERS Platforms for Monitoring Environmental Pollutants	Ding-Jia Yueh, Yu-Xiang Wang, Yong-Yi Lo, Chi-Chieh Huang, Kuan-Syun Wang, Gong-De Lin, Ting-Yu Liu, Yu-Lin Kuo	Ding-Jia Yueh	Ting-Yu Liu	National Taiwan University of Science and Technology
E-P-501	Synthesis and characteristics of iron and zinc doped tricalcium phosphate	Fang-Yu Tsai, Yung-Hsuan Tsai, Yung-Chin Yang	Yung-Hsuan Tsai	Yung-Chin Yang	National Taipei University of Technology
E-P-503	Hydroxyapatite coating with various morphology by the suspension thermal spray	Pei-Jia Lai, Yi-Xuan Liao, Yung-Chin Yang	Yi-Xuan Liao	Yung-Chin Yang	National Taipei University of Technology
E-P-507	Corrosion behavior and bone regeneration response of atmospheric plasma surface-treated titanium implants in betel nut mixture	Chih-Ling Huang, Yu-Lin Kuo, Wei-Jen Chang, Ying-Sui Sun*	Environment Chih-Ling Huang	Ying-Sui Sun	Taipei Medical University
F-P-20	Microstructural Evolution and Hardness of WMoVTi Refractory High-Entropy Alloy Coatings Synthesized via Mechanical Alloying	Cheng-Hao Chung, Chun-Liang Chen	Cheng-Hao Chung	Chun-Liang Chen	National Dong Hwa University
F-P-21	Synthesis and Performance of CoFeNiVMo HEA Coatings on Al6061 via Mechanical Alloying	Ting-Hao Chiu, Chun-Liang Chen	Ting-Hao Chiu	Ting-Hao Chiu, Chun-Liang Chen	National Dong Hwa University
F-P-69	Analysis of High-Temperature Oxidation Behavior of AlTiN-Based Multilayer Coatings	Sheng-Hung Liu, Yin-Yu Chang, Ching-Chieh Lin	Ching-Chieh, Lin	Yin-Yu CHANG	National Formosa University
F-P-114	Integrating Machine Learning and First-Principles Calculations to Explore Hydrogen Storage and Spillover on FeCoNiMnRu High-Entropy Alloy Surfaces	Hsuan-Ya Huang, Chao-Cheng Kaun, Amit Kumar Sharma, Yen-Hsun Su	Hsuan-Ya Huang	Hsuan-Ya Huang	National Cheng Kung University
F-P-213	Electrocatalysis Performance Analysis of FeNi ₄ MoWCu High Entropy Alloy Thin Films	Yen-Chin Lai, Bih-Show Lou, Jyh-Wei Lee	Yen-Chin Lai	Bih-Show Lou	National Taipei University of Technology
F-P-232	Mechanical properties evaluation of CrMoNbTiW high entropy alloy carbide thin films	Han-Chieh Chen, Bih-Show Lou, Jyh-Wei Lee	Han-Chieh Chen	Jyh-Wei Lee	Ming Chi University of Technology
F-P-252	Corrosion resistance and mechanical properties of AlCrNbSiTiMo high entropy alloy films fabricated by HIPIMS: effect of Mo contents	Chang-Yi Jiang†, Chia-Lin Li, Bih-Show Lou, Jyh-Wei Lee*	Chang-Yi Jiang	Jyh-Wei Lee	Ming Chi University of Technology
F-P-288	Investigating properties of ball milled AlCrNb _{0.5} SiTi High Entropy Alloy powders for thermal spraying	Yuan Deng, Shih-Hsun Chen	Yuan Deng	Shih-Hsun Chen	National Yang Ming Chiao Tung University

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F-P-302	Fabrication and property evaluation of AlCrNbSiTi high entropy alloy coatings by high power impulse magnetron sputtering: effect of Nb content	Sheng-Jui Tseng, Chia-Lin Li, Yung-Chin Yung, Bih-Show Lou, Jyh-Wei Lee	SHENG JUI TSENG	Jyh-Wei Lee	National Taipei University of Technology
F-P-316	The study of the reactive sputtering of CrMoNbWN medium entropy alloy nitride films by a superimposed HiPIMS-MF sputtering system: effect of nitrogen content	Chun-Hao Cheng, Yung-Chin Yang, Chia-Lin Li, Bih-Show Lou, Jyh-Wei Lee	ChunHao Chang	Jyh-Wei Lee	National Taipei University of Technology
F-P-319	CrMoNbWTiN Nitride Films Deposited by Superimposed HiPIMS-MF Sputtering with PEM Feedback Control: Microstructure and Property Analysis	Bing-Yan Lu, Yung-Chin Yang, Chia-Lin Li, Bih-Show Lou, Jyh-Wei Lee	Bing-Yan Lu	Jyh-Wei Lee	National Taipei University of Technology
F-P-345	Tailoring the Microstructure and Mechanical Properties of TiZrNbTaMo High Entropy Alloys Films via Different Magnetron Sputtering Power Modes	Chia-Lin Li, Sen-You Hou, Bih-Show Lou, Jyh-Wei Lee, Po-Yu Chen	Chia-Lin Li	Chia-Lin Li	Ming Chi University of Technology
F-P-376	High-Performance Lithium-Ion Anodes Enabled by Sn-Containing High-Entropy Alloy Nanoparticles	H.K. Tseng, L. Y. Hsiao, W.L. Wang, and T. Y. Lin	L. Y. Hsiao	T. Y. Lin	National Tsing Hua University
F-P-447	Flexible High-Entropy Relaxor Ferroelectric for Sustainable Piezoelectric Sensors	Yu-En Pan	Yu-En Pan	Ying-Hao Chu	National Tsing Hua University
F-P-473	High Entropy Oxide/Alloys: Tailoring separator coating for next-generation lithium sulfur batteries	Indah Ayu Purwaningrum, Ming-Roe Wann, Sheng-Heng Chung, Jyh-Ming Ting	Indah ayu Purwaningrum	Jyh-Ming Ting	National Cheng Kung University
F-P-474	Harnessing Bimetallic Synergy of Iron-Cobalt: Alloy for Photocatalytic Fenton Oxidation	Jyh-Ming Ting and Yemima Purba	Prof. Jyh-Ming Ting	Jyh-Ming Ting	National Cheng Kung University
F-P-476	Formation of Quasycrystalline Al-Co-Ni Thin Films: Influence of Elemental Stacking Sequence and Diffusion Pathways	Tzu-Chi Liu, Jhong-Ren Huang	Tzu-Chi Liu	Jhong-Ren Huang	National Taiwan university of science and technology
G-P-15	Exceptional Adhesion Enhancement of Ag Electrodes on Glass and Polymer Substrates via Ultrathin SiO _x interlayers	Jungheum Yun	Jungheum Yun	Jungheum Yun	Korea Institute of Materials Science
G-P-25	Exploring segregant effects on heat-assisted FePt media and performing deep learning in microstructural image segmentation	Jun-Hao Weng, Rei-Chen Xie, Hao-Hsiang Chang, Yu-Jen Chuang, Teng-Sheng Hsu, Hsin-Hau Huang, Jai-Lin Tsai	Jun-Hao Weng	Jai-Lin Tsai	National Chung Hsing University
G-P-72	Investigation of the Degradation Behavior of AlInGaP LEDs under Extreme Temperature Fluctuations with Material Characterization and AI-driven Protective Circuit Design	Chun-Yen Yang, Hsiang Chen	Chun-Yen Yang	Hsiang Chen	National Chi Nan University
G-P-111	Enhancement of anisotropic magnetoresistance for NiFe films with IrMn capping layer	G. W. Huang, P. H. Lin, H. W. Chang	Guan Wei Huang	G. W. Huang	National Chung Cheng University
G-P-112	Ferroelectric properties of pulsed laser deposited Bi _{0.9} Gd _{0.1} FeO ₃ films with laser wavelengths	Ting-Kai Lin, Yu-Cheng Chang, Huang-Wei Chang, Chang-Ren Wang, Da-Hua Wei, Chi-Shun Tu, P. Y. Chen	Yu-Cheng Chang	Yu-Cheng Chang	Tungshai University
G-P-151	Effect of Auxiliary Target Material and Process Parameters on Plasma Behavior of CrAl in Bipulse-HiPIMS Co-Sputtering under Ar/N ₂ Atmosphere	Rui-Xu Zhang, Ying-Hsiang Lin, Kai-Shawn Tang, Chih-Yen Lin, Yi-Hui Lee, Wan-Yu Wu	Rui-Xu Zhang	Wan-Yu Wu	National United University

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G-P-205	Optimization of Thermal Gas Flow Field Inside a Large-Scale Furnace	Hua-Lin Chen, Wei-Chun Chen, Hung-Pin Chen, Hung-Pin Chen, Yu-Wei Lin, Fong-Zhi Chen	Hua-Lin Chen	Hua-Lin Chen	National Center for Instrumentation Research, National Institutes of Applied Research
G-P-310	Ab initio studies of work function changes and adsorption energy of CO ₂ adsorption on SnO ₂ (110) surfaces for gas sensors	Wen-Ding Wei, Sheng-Fang Huang, Yi-Ting Tsai, Chun-Che Lee, Po-Liang Liu	Wen-Ding Wei	Po-Liang Liu	National Chung Hsing University
G-P-328	Inverse Determination of Thin Film Parameters Using Deep Learning on Multi-Angle Ellipsometry at a Fixed Wavelength	Min Yan Chen, Hsiang Yu Chung, Hung Chih Hsieh	Min Yan Chen	Hung Chih Hsieh	National United University
G-P-380	Modeling study on the Atomic Layer Etching of Al ₂ O ₃ films using Hydrogen Fluoride and Trimethylaluminum	Chung-Yen Hsueh	Chung-Yen Hsueh	Ta-Chin Wei	Chung Yuan christian university
G-P-399	Machine Learning Modeling of the Relationship Between Process Parameters and Film Quality in WS ₂ Chemical Vapor Deposition	Cheng-Chang Tsai, Wei-Chun Chen, Yu-Wei Lin, Cheng-Tang Pan	Cheng-Chang Tsai	Cheng-Chang Tsai	National Sun Yat-sen University
G-P-400	Energy consumption and efficiency modeling and multi-objective optimization analysis of WS ₂ chemical vapor deposition process based on machine learning.	Yu-Peng Huang, Wei-Chun Chen, Yu-Wei Lin, Cheng-Tang Pan	Yu-Peng Huang	Yu-Peng Huang	National Sun Yat-sen University
G-P-414	Simulating the impact of various hole transport layers on CsPb ₂ Br perovskite solar cells under indoor low-light conditions using SCPAS-1D	Chih-Hsi Peng and Yi-Cheng Lin	Chih-Hsi Peng	Yi-Cheng Lin	National Changhua University of Education
G-P-424	Mechanistic Insights into Ferroelectric Phase Stabilization of HZO on Nitrogen-Doped Amorphous Al ₂ O ₃ Interfacial Layer	Yuan-An Lin, Hao-Kai Peng, Yu-Cheng Kao, Pin-Jiun Wu, Chun-Lung Kuo, Yung-Hsien Wu, Hsin-Yi Tiffany Chen	Yuan-An Lin	Hsin-Yi Tiffany Chen	National Tsing Hua University
G-P-460	Controlling the preferred orientation of tetragonal ZrO ₂ thin films via Nb ₂ O ₅ insertion to enhance the dielectric properties	Chaeyeong Hwang, Kyungmo Yang, Myeong Ho Kim, Jin-Sik Kim	Yujin Lim	Woojin Jeon	Kyung Hee University

TACT 2025 Local Tour

TACT 2025

TAMSUI

blue highway cruise
Half-Day Tour

29

OCT WED

12:30 **Departure**
GIS Taipei Tech Convention Center

13:00-14:30 **Dihua Street**
Taipei's oldest trading street filled with traditional goods and historic architecture.

Xiahai Chenghuang Temple
A popular local temple known for its matchmaking deity.

Zi Yang Wagashi
A local confectionery blending Japanese wagashi techniques with Taiwanese flavors.

Jiang Ji Hualong
A long-standing store famous for dried meat and local snacks.

Shilian-dong Historical Complex
A row of ten historic Japanese-era dormitories, now preserved as cultural heritage.

14:30-15:30 **Tamsui River Blue Highway Cruise**
(Boarding at Dadaocheng Wharf, sailing to Tamsui)
Enjoy scenic views of the riverside and learn about Taipei's historical port culture.

15:45-17:30 **Fort San Domingo**
A 17th-century fortress built by the Dutch, reflecting Tamsui's colonial past.

Hobe Fort
A Qing-era coastal fort built to defend the Tamsui River entrance.

17:40-18:30 **Tamsui Old Street**
A charming old town filled with local snacks like fish crisps, "A-pis" tofu, and plum juice.

18:30-19:30 **Dinner**

20:30 **Arrival**
GIS Taipei Tech Convention Center

CALIN TECHNOLOGY CO., LTD

佳凌科技股份有限公司

• Product feature & service

Calin Technology specializes in the R&D and manufacturing of optical lenses, offering customized development, design, and OEM/ODM services. Our product portfolio includes video lenses, automotive lenses, projector lenses, industrial lenses, AI vision lenses, infrared lenses, and other high-precision optical products.

佳凌科技專注於光學鏡頭的研發與製造，提供客製化開發服務、設計與OEM/ODM代工。產品涵蓋視訊鏡頭、車載鏡頭、投影機鏡頭、工業用鏡頭、AI視覺鏡頭、紅外線鏡頭及其他高精密光學產品。

• Important achievements

With strong optical design expertise and strict quality control, we are committed to delivering competitive products and innovative solutions to our customers.

CALIN is the optical companies with the capability to integrate all the optical components.

我們以專業的光學設計能力與嚴謹的製程品質，致力於為客戶提供最具競爭力的產品與解決方案且具備垂直整合光學元件製造能力之廠商。

CALIN Technology
IATF16949, VDA6.3
ISO 9001:2008, ISO/TSI16949
QC-080000, TTQ3, ISO-14001:2004

CORE TECHNOLOGIES AND COMPETENCE
Manufacturing Process:
Vertical Integration from design to production

ADAS
Surround view, Park Assist/Surround view, Traffic Sign Recognition, Lane Departure Warning, Surround view

Key Optical Technologies
Optical Component, Design, Reliability Test, Assembly, PVD Coating, Mold

Assembly Optical Component Mold

The diagram illustrates the company's core competencies and manufacturing process. It features a central 'Key Optical Technologies' hub surrounded by 'Optical Component', 'Design', 'Reliability Test', 'Assembly', and 'PVD Coating'. Below this, a grid shows 'Assembly', 'Optical Component', and 'Mold' stages with various lens and component images.

