

# XIX-ICSMV 2026

International Conference on  
Surfaces, Materials and Vacuum



September 21 to 25, 2026



Mérida, Yucatán, México

*Mérida*



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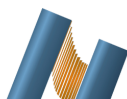
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# WELCOME MESSAGE

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## XIX INTERNATIONAL CONFERENCE ON SURFACE, MATERIALS AND VACUUM

Dear Colleagues,

From its inception, the Annual Conference of the Sociedad Mexicana de Ciencia y Tecnología de Superficies y Materiales (SMCTSM, Mexican Society of Science and Technology of Surfaces and Materials) has been an important forum for the Mexican scientific community to discuss topics related to research in the fields of surface and materials science.

On this occasion, we are pleased to welcome you to participate in the **XIX International Conference on Surface, Materials and Vacuum (IC-SMV)**, to be held from **September 21–25, 2026**, at the **Hotel Fiesta Americana** in **Mérida, Yucatán, México**.

The conference program includes plenary talks, short courses, and scientific symposia featuring oral and poster presentations. In addition to the scientific program, participants will have the opportunity to exchange ideas, establish collaborations, and engage with researchers, students, and professionals from different institutions and areas of expertise.

We hope that the efforts of the organizing committee, sponsors, speakers, participants, and colleagues will contribute to an engaging and friendly gathering, providing opportunities for scientific discussion, collaboration, and new interactions among researchers from diverse institutions.

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**The XIX ICSMV**  
**Organizing Committee, SMCTSM**  
Mérida, Yucatán, México  
September 2026

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# XIX International Conference on Surfaces, Materials and Vacuum (XIX - ICSMV 2026)

Organized by the “Sociedad Mexicana de Ciencia y Tecnología de Superficies y Materiales (SMCTSM)”

**SEPT | 21 - 25 | 2026**

**Hotel Fiesta Americana  
Mérida, Yucatán, México**

| SUNDAY, SEPTEMBER 20                      |                               |         |         |          |
|-------------------------------------------|-------------------------------|---------|---------|----------|
| 17:00 - 20:00 Registration & Badge Pickup |                               |         |         |          |
| MONDAY, SEPTEMBER 21                      |                               |         |         |          |
| 08:30-9:00                                | REGISTRATION                  |         |         |          |
| 09:00-10:00                               | OPENING CEREMONY              |         |         |          |
| 10:00-10:15                               | In Memoriam                   |         |         |          |
| 10:15-10:30                               | Launch of Atomo x Atomo       |         |         |          |
| 10:30-10:45                               | COFFEE BREAK & EXHIBITS       |         |         |          |
| 10:45-11:45                               | Plenary 1 - Ajayan Vinu       |         |         |          |
| 11:45-12:00                               | REN 94                        | THF 104 | BIO 12  | AQMC 208 |
| 12:00-12:15                               |                               |         | BIO 67  |          |
| 12:15-12:30                               | REN 360                       | THF 25  | BIO 95  | AQMC 11  |
| 12:30-12:45                               | REN 272                       | THF 33  | BIO 109 | AQMC 250 |
| 12:45-13:00                               | REN 366                       | THF 58  | BIO 128 | AQMC 22  |
| 13:00-13:15                               | REN 408                       | THF 68  | BIO 140 | AQMC 268 |
| 13:15-15:00                               | LUNCH BREAK                   |         |         |          |
| 15:00-15:15                               | REN 290                       | THF 118 | BIO 154 | AQMC 355 |
| 15:15-15:30                               |                               | THF 112 | BIO 163 | AQMC 241 |
| 15:30-15:45                               | REN 264                       | THF 199 | BIO 188 | AQMC 115 |
| 15:45-16:00                               | REN 119                       | THF 200 | BIO 192 | AQMC 14  |
| 16:00-16:15                               | REN 302                       | THF 343 | BIO 278 | AQMC 165 |
| 16:15-16:30                               | REN 421                       | THF 428 | BIO 297 | AQMC 18  |
| 16:30-16:45                               | COFFEE BREAK                  |         |         |          |
| 16:45-17:45                               | Plenary 2 -Masakazu Kobayashi |         |         |          |
| 18:00-20:00                               | WELCOME COCKTAIL              |         |         |          |

| TUESDAY, SEPTEMBER 22 |                                                                        |              |         |                                            |
|-----------------------|------------------------------------------------------------------------|--------------|---------|--------------------------------------------|
| 08:30-9:00            |                                                                        | REGISTRATION |         |                                            |
| 09:00-09:15           | REN 164                                                                | LP 7         | SEM 194 | COURSE I:<br>Isai S. H. L.<br>Arturo T. S. |
| 09:15-09:30           | REN 124                                                                | LP 20        |         |                                            |
| 09:30-09:45           | REN 252                                                                | LP 23        | SEM 46  |                                            |
| 09:45-10:00           | REN 415                                                                | LP 27        | SEM 175 |                                            |
| 10:00-10:15           | REN 442                                                                | LP 35        | SEM 197 |                                            |
| 10:15-10:30           | REN 99                                                                 | LP 40        | SEM 228 |                                            |
| 10:30-10:45           | COFFEE BREAK & EXHIBITS                                                |              |         |                                            |
| 10:45-11:45           | Plenary 3 -Manuel Quevedo                                              |              |         |                                            |
| 11:45-13:15           | Desarrollo del sector de semiconductores en México y sureste de México |              |         |                                            |
| 13:15                 | FREE AFTERNOON                                                         |              |         |                                            |

| SCIENCE OUTREACH SYMPOSIUM |     |             |     |             |     |             |     |             |     |
|----------------------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|
| MONDAY                     | ID  | TUESDAY     | ID  | WEDNESDAY   | ID  | THURSDAY    | ID  | FRIDAY      | ID  |
| 11:00-12:00                | 280 | 09:00-10:00 | 403 | 09:00-10:00 | 71  | 09:00-10:00 | 404 | 09:00-10:00 | 47  |
| 11:30-12:30                | 39  | 10:00-11:00 | 383 | 09:00-10:00 | 314 | 10:00-11:00 | 385 | 10:00-11:00 | 444 |
| 13:00-14:00                | 31  | 11:00-12:00 | 370 | 10:00-11:00 | 187 | 16:00-17:00 | 162 |             |     |
| 16:00-17:00                | 306 |             |     | 12:00-13:00 | 390 |             |     |             |     |
|                            |     |             |     | 15:00-16:00 | 294 |             |     |             |     |
|                            |     |             |     | 16:00-17:00 | 426 |             |     |             |     |

| WEDNESDAY, SEPTEMBER 23 |         |                              |          |                                            |
|-------------------------|---------|------------------------------|----------|--------------------------------------------|
| 07:00-8:30              |         | 4th ATHLETIC CONFERENCE RACE |          |                                            |
| 09:00-9:30              |         | REGISTRATION                 |          |                                            |
| 09:30-09:45             | SEM 17  | LP 49                        | SDMH 81  | COURSE I:<br>Isai S. H. L.<br>Arturo T. S. |
| 09:45-10:00             |         | LP 50                        | SDMH 84  |                                            |
| 10:00-10:15             | SEM 103 | LP 60                        | SDMH 98  |                                            |
| 10:15-10:30             | SEM 224 | LP 75                        | SDMH 157 |                                            |
| 10:30-10:45             | SEM 225 | LP 110                       | SDMH 179 |                                            |
| 10:45-11:00             | SEM 322 | LP 168                       | SDMH 205 |                                            |
| 11:00-11:15             |         | COFFEE BREAK                 |          |                                            |
| 11:15-12:15             |         | Plenary 4 - Yi-Hao Chu       |          |                                            |
| 12:15-12:30             | SEM 384 | LP 209                       | SDMH 400 | COURSE I:<br>Isai S. H. L.<br>Arturo T. S. |
| 12:30-12:45             |         | LP 219                       |          |                                            |
| 12:45-13:00             | SEM 248 | LP 287                       | SDMH 182 |                                            |
| 13:00-13:15             | SEM 292 | LP 293                       | SDMH 235 |                                            |
| 13:15-13:30             | SEM 190 | LP 310                       | SDMH 276 |                                            |
| 13:30-13:45             | SEM 405 | LP 376                       | SDMH 374 |                                            |
| 13:45-15:30             |         | LUNCH BREAK                  |          |                                            |
| 15:30-15:45             | SEM 277 | LP 42                        | SDMC 237 | TT: ISASA                                  |
| 15:45-16:00             |         | LP 51                        | SDMC 240 |                                            |
| 16:00-16:15             | SEM 399 | LP 134                       | SDMC 423 |                                            |
| 16:15-16:30             | SEM 299 | LP 145                       | SDMC 414 |                                            |
| 16:30-16:45             | SEM 196 | LP 367                       | SDMC 97  |                                            |
| 16:45-17:00             | SEM 263 | LP 407                       | SDMC 244 |                                            |
| 17:00-17:15             |         | COFFEE BREAK                 |          |                                            |
| 17:15-18:15             |         | Plenary 5 - Teri Odom        |          |                                            |
| 18:15-20:15             |         | POSTER SESSION 1             |          |                                            |

| THURSDAY, SEPTEMBER 24 |                              |              |                                        |          |
|------------------------|------------------------------|--------------|----------------------------------------|----------|
| 08:30-09:00            |                              | REGISTRATION |                                        |          |
| 09:00-09:15            | NS 93                        | MEMS 38      | TSI 427                                | ASPPV 37 |
| 09:15-09:30            |                              | MEMS 101     |                                        | ASPPV 32 |
| 09:30-09:45            | NS 3                         | MEMS 120     | TSI 30                                 | ASPPV 61 |
| 09:45-10:00            | NS 13                        | MEMS 221     | TSI 159                                | ASPPV 70 |
| 10:00-10:15            | NS 82                        | MEMS 229     | TSI 48                                 | ASPPV 28 |
| 10:15-10:30            | NS 90                        | MEMS 257     | TSI 202                                | ASPPV 32 |
| 10:30-10:45            | COFFEE BREAK & EXHIBITS      |              |                                        |          |
| 10:45-11:45            | Plenary 6 - Patrick Woodward |              |                                        |          |
| 11:45-12:00            | NS 111                       | MEMS 318     | TSI 424                                | TT       |
| 12:00-12:15            | NS 129                       | MEMS 336     | TSI 409                                |          |
| 12:15-12:30            | NS 361                       | MEMS 351     | TSI 54                                 |          |
| 12:30-12:45            | NS 133                       | MEMS 353     | TSI 102                                |          |
| 12:45-13:00            | NS 413                       | MEMS 363     | TSI 307                                |          |
| 13:00-13:15            | NS 379                       | MEMS 389     | TSI 441                                |          |
| 13:15-15:00            | LUNCH BREAK                  |              |                                        |          |
| 15:00-15:15            | NS 72                        | CTDMI 315    | COURSE II:<br>Alberto<br>Herrera Gómez | TT       |
| 15:15-15:30            |                              | CTDMI 437    |                                        |          |
| 15:30-15:45            | NS 171                       | CTDMI 24     |                                        |          |
| 15:45-16:00            | NS 329                       | CTDMI 291    |                                        |          |
| 16:00-16:15            | NS 193                       | CTDMI 319    |                                        |          |
| 16:15-16:30            | NS 238                       |              |                                        |          |
| 16:30-16:45            | COFFEE BREAK                 |              |                                        |          |
| 16:45-17:45            | Plenary 7- Dan Killelea      |              |                                        |          |
| 17:45-19:45            | POSTER SESSION 2             |              |                                        |          |
| 20:30                  | GALA DINNER                  |              |                                        |          |

| FRIDAY, SEPTEMBER 25                         |        |           |                                     |  |
|----------------------------------------------|--------|-----------|-------------------------------------|--|
| 08:30-09:00 REGISTRATION                     |        |           |                                     |  |
| 9:00-09:15                                   | NS 242 | CTDMI 436 | COURSE II: Alberto<br>Herrera Gómez |  |
| 09:15-09:30                                  | NS 249 |           |                                     |  |
| 09:30-09:45                                  | NS 260 | CTDMI 64  |                                     |  |
| 09:45-10:00                                  | NS 265 | CTDMI 328 |                                     |  |
| 10:00-10:15                                  | NS 269 | CTDMI 303 |                                     |  |
| 10:15-10:30                                  | NS 425 | CTDMI 439 |                                     |  |
| 10:30-10:45 COFFEE BREAK & EXHIBITS          |        |           |                                     |  |
| 10:45-11:45 Plenary 8 - José Ordoñez-Miranda |        |           |                                     |  |
| 11:45-12:45 Plenary 9 - Emmanuel Haro        |        |           |                                     |  |
| 12:45-15:00 GENERAL ASSEMBLY & CLOSING       |        |           |                                     |  |

|        |                                                      |        |                                                                  |
|--------|------------------------------------------------------|--------|------------------------------------------------------------------|
| BIO:   | BIOMATERIALS AND POLYMERS                            | NS:    | NANOSTRUCTURES                                                   |
| SEM:   | SEMICONDUCTORS                                       | THF:   | THIN FILMS                                                       |
| LP:    | LUMINESCENCE PHENOMENA: MATERIALS AND APPLICATIONS   | SDMH:  | SIMPÓSIO DR. MUHL                                                |
| MEMS:  | MICROELECTRONICS AND MEMS                            | SDMC:  | SIMPÓSIO DR. MACHORRO                                            |
| AQMC:  | ADVANCED AND QUANTITATIVE MATERIALS CHARACTERIZATION | TSI:   | TRIBOLOGY, SURFACES AND INTERFACES                               |
| ASPPV: | ATOMIC- SCALE PROCESSING, PLASMA, AND VACUUM         | CTDMI: | COMPUTATIONAL AND THEORETICAL DESIGN OF MATERIALS AND INTERFACES |
| REN:   | RENEWABLE ENERGY: MATERIALS AND DEVICES              | TT:    | TECHNICAL TALK                                                   |

|               |                 |
|---------------|-----------------|
| Yucatán 1     | Izamal          |
| Mérida        | Celestún        |
| Terraza Sisal | Terraza Montejo |

# PLENARY SESSION 1

MONDAY, SEPTEMBER 21 • 10:45–11:45



PROFESSOR

**Ajayan Vinu**

Director, Global Innovative Center for Advanced Nanomaterials (GICAN)

University of Newcastle

*Australia*

## NANOSTRUCTURED CARBON: SHAPING THE FUTURE OF ENERGY, ENVIRONMENT AND SUSTAINABILITY

### ABSTRACT

In this lecture, I will introduce a new generation of clean-energy technologies built on advanced nanoporous semiconducting and conducting materials. Our team at GICAN has developed highly stable and innovative nanostructures capable of producing clean hydrogen directly from seawater using sunlight, capturing CO<sub>2</sub>, converting it into valuable fuels, and storing the harvested energy through next-generation supercapacitor and battery systems. This integrated approach marks a significant step toward a circular, carbon-neutral energy future.

The main concept of this technology involves a series of multifunctional nanoporous semiconducting and conducting materials, including carbon nitrides and other carbon-based frameworks. These materials exhibit controlled architectures, tunable pore structures, and adjustable chemical compositions, supporting highly efficient solar-assisted processes. I will provide an overview of how these tailored nanostructures are designed and fabricated and how their properties can be modulated for targeted performance in catalysis and energy storage.

Particular attention will be given to novel mesoporous C<sub>3</sub>N<sub>5</sub>, C<sub>3</sub>N<sub>6</sub>, C<sub>3</sub>N<sub>7</sub>, and C<sub>3</sub>N<sub>8</sub> materials and their structural characterization using advanced spectroscopic techniques. I will also demonstrate how their chemical composition, structure, porosity, and functionalization can be precisely tuned, including carbon nitrides prepared from single molecular precursors containing C, N, and S elements, as well as mono- and bimetallic sulfides.

The second part of the talk will highlight applications in solar-assisted seawater splitting, CO<sub>2</sub> capture and conversion, and next-generation batteries and supercapacitors. Progress toward large-scale production, including pilot-scale facilities for CO<sub>2</sub> capture and material manufacturing, will also be presented. Finally, I will discuss how integrating CO<sub>2</sub> conversion technologies with fuel cells and electrochemical storage platforms can lead to a unified and sustainable energy system for stationary, mobile, and automotive applications.

### PROFESSIONAL BIOGRAPHY

Laureate Professor Ajayan Vinu is Director of the Global Innovative Center for Advanced Nanomaterials (GICAN) at the University of Newcastle. He is internationally recognized for his work on advanced nanoporous materials containing different functional elements, prepared through innovative chemical approaches for applications in carbon capture and conversion, energy storage and conversion, and catalysis.

Professor Vinu discovered a series of novel nanoporous materials, including the world's first nanoporous carbon nitrides, highly crystalline nanoporous fullerenes based on different carbon molecules such as C<sub>60</sub> and C<sub>70</sub>, and nanoporous biomolecules including cytochrome c.

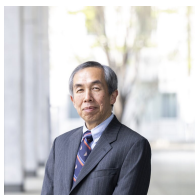
His achievements have been recognized through numerous international awards, including Clarivate Highly Cited Researcher recognition (2024), the JSPS Senior Invitational Fellowship, the Aether Industries Indian Chemical Society Centennial Jubilee Award, the Asian Paints Padma Vibhushan Dr. R.A. Mashelkar Medal, the Chemical Research Society of India Medal, the Friedrich Wilhelm Bessel Award, and the Chemical Society of Japan Award for Young Scientists.

He is a Fellow of several distinguished scientific organizations, including the Royal Society of Chemistry, Royal Australian Chemical Institute, World Academy of Ceramics, Asia-Pacific Academy of Materials, and World Academy of Art and Science. He has authored approximately 600 publications, received about 47,500 citations, and has an h-index of 112.

Professor Vinu also holds a portfolio of 32 national and international patents on novel mesoporous carbon, silica, and carbon nitride materials and has secured more than AUD 32 million in research funding. He serves on the editorial boards of several leading journals and has also served as Editor of *Carbon*.

# PLENARY SESSION 2

MONDAY, SEPTEMBER 21 • 16:45–17:45



PROFESSOR

**Masakazu Kobayashi**

Department of Electrical Engineering and  
Bioscience

Waseda University

Tokyo, Japan

## MOLECULAR BEAM EPITAXY GROWTH OF SEVERELY LATTICE MISMATCHED TE COMPOUNDS AND THEIR CRYSTALLOGRAPHIC CHARACTERIZATIONS USING XRD POLE FIGURE MEASUREMENT

### ABSTRACT

Growth of severely lattice mismatched materials is always difficult, but the success could open a glorious future. In this context, MBE growth and characterization of two different materials combinations would be discussed. They are namely the rock salt structure SnTe layer growth on zincblende structure GaAs substrates and zincblende structure ZnTe layer growth on "hexagonal"  $\text{Al}_2\text{O}_3$  substrates.

High temperature thermal treatment of  $\text{Al}_2\text{O}_3$  substrates produces atomically flat surfaces or nano-facet structures. The orientation of the successively grown ZnTe layers were drastically affected by the direction of the substrate surface orientation as well as the surface treatment conditions.

(100) oriented layer of SnTe can be grown on (100) oriented GaAs substrate, but (111) layers can be also grown on (100) substrates. SnTe (100) single-domain thin films have been previously grown on GaAs substrates by molecular beam epitaxy but obtaining excellent crystallinity can be difficult. ZnTe buffer layers are introduced to improve the crystallinity of SnTe films. The effects of the molecular beam flux ratio ( $J_{\text{Te}}/J_{\text{Sn}}$ ) and growth temperature ( $T_g$ ) on the crystallinity are investigated to achieve high-quality layers.

The surface morphology and electrical properties of the SnTe thin films are also evaluated in addition to the conventional X-ray diffraction measurements. The crystallographic properties of the grown samples are shown to be significantly improved by introducing a ZnTe buffer layer. It is also found that lowering  $J_{\text{Te}}/J_{\text{Sn}}$  to 0.6 results in a reduced growth rate, and an increased growth temperature ( $T_g = 220^\circ\text{C}$ ) promotes the migration of atoms at the growth front.

The  $\theta$ -- $2\theta$  scan indicated that the layer included (001), (011), and (111) oriented crystals. However, the pole figure images revealed strong signals originating from the (111) crystal, while the (001) and (011) crystals were less pronounced. The XRD pole figure therefore provides detailed structural information that cannot be obtained from a conventional  $\theta$ -- $2\theta$  scan alone.

This work was supported in part by a Waseda University Grant for Special Research Projects and was partly carried out at the Joint Research Center for Environmentally Conscious Technologies in Materials Science at ZAIKEN, Waseda University.

### PROFESSIONAL BIOGRAPHY

Masakazu Kobayashi received the B.Eng. degree from Waseda University in 1983 and the Dr. Eng. degree from Tokyo Institute of Technology in 1988. He then joined an MBE group at Purdue University and later moved to Chiba University in 1992. In 2000, he moved to Waseda University as a full professor.

He has worked on molecular beam epitaxy since his undergraduate studies. His research has included the MBE growth of InGaAlSb, ZnSe:Mn DC electroluminescence devices, ZnSe--ZnTe strained-layer superlattices, and injection-type blue-green laser diodes based on ZnSe/ZnCdSe MQWs.

His more recent interests include novel terahertz detection device structures using ZnTe epilayers on sapphire substrates, photovoltaic devices using Te-based chalcopyrite materials, and thin-film growth of the topological crystalline insulator SnTe.

His research also covers a wide range of characterization methods, including TEM analysis, PL characterization, and various XRD techniques, particularly pole figure analysis.



# PLENARY SESSION 3

TUESDAY, SEPTEMBER 22 • 10:45–11:45



PROFESSOR

**Manuel Quevedo**

Department of Materials Science and Engineering

Center for Harsh Environment Semiconductor and Systems (CHESS)

*The University of Texas at Dallas*

## SEMICONDUCTOR MATERIALS AND SENSOR TECHNOLOGIES FOR HARSH ENVIRONMENT SYSTEMS

### ABSTRACT

Reliable operation of electronic systems in extreme environments---high temperature, ionizing radiation, high pressure, and corrosive or high-power conditions---is a persistent bottleneck for applications spanning aerospace, deep-well energy exploration, nuclear instrumentation, and next-generation power electronics.

Conventional silicon-based semiconductors and sensors degrade rapidly under these conditions due to intrinsic carrier generation, defect proliferation, and interfacial instability, motivating the development of wide-bandgap (WBG) materials systems---including silicon carbide (SiC), gallium nitride (GaN), and related ultra-wide-bandgap compounds---capable of sustained performance well beyond the limits of conventional technology.

This talk presents research from our group and the Center for Harsh Environment Semiconductor and Systems (CHESS) at UT Dallas on the materials science underpinning sensors and electronic devices designed to operate reliably under extreme conditions. We discuss material systems and their integration with emphasis on the structure--property--performance relationships that govern their behavior.

### PROFESSIONAL BIOGRAPHY

Professor Manuel Quevedo is Director of the Center for Harsh Environment Semiconductors and Systems (CHESS) at The University of Texas at Dallas. He joined UT Dallas in 2007. Before joining the university, he worked in the Texas Instruments R&D Department, where he developed novel materials and devices for Si-based technology.

While at Texas Instruments, Dr. Quevedo was appointed as a Texas Instruments assignee at International Sematech, where he worked with companies including Intel, IBM, Motorola, Samsung, and AMD on research related to alternative materials for metal-gate and high-*k* applications.

Professor Quevedo has published more than 400 papers and three book chapters and holds 15 U.S. patents, with six more pending. His current research includes materials and devices for large-area electronics and sensors, as well as novel materials for Si-based technology.

Dr. Quevedo is a member of the scientific board of Nanoholdings LLC and RDUSA LLC and a member of the executive boards of Contex, the Center for Advanced Materials in Mexico, the Center for Applied Chemistry in Mexico, and the Texas Task Force to host the National Semiconductor Tech Center (NSTC).

His research has received support from the National Science Foundation (NSF), Air Force Office of Sponsored Research (AFOSR), Defense Advanced Research Projects Agency (DARPA), Domestic Nuclear Detection Office (DNDO), Conacyt, Texas Instruments, Department of Homeland Security (DHS), and NanoHoldings LLC.

# PLENARY SESSION 4

WEDNESDAY, SEPTEMBER 23 • 11:15–12:15



PROFESSOR

**Ying-Hao Chu**

Department of Materials Science & Engineering  
National Tsing Hua University  
*Taiwan*

## UNLEASHING THE POTENTIAL OF VAN DER WAALS HETEROEPITAXY ON MUSCOVITE FOR NEXT-GENERATION FLEXIBLE ELECTRONICS

### ABSTRACT

The rapid proliferation of flexible, wearable, and transparent electronics has driven a massive demand for high-performance device components. However, the development of such electronics is fundamentally hindered by conventional flexible substrates such as polymers, which suffer from poor thermal tolerance and chemical instability, thereby limiting the integration of high-quality crystalline materials. To overcome these bottlenecks, van der Waals (vdW) heteroepitaxy on muscovite mica—a platform known as “MICAtronics”—has emerged as a revolutionary solution. This plenary talk will explore the fundamental mechanisms and recent breakthroughs of this technology, highlighting three of its most remarkable characteristics.

First, muscovite mica serves as an outstanding flexible substrate with extraordinary environmental stability. When thinned to the micrometer scale, it exhibits excellent mechanical flexibility while retaining high optical transparency, chemical inertness, and extreme thermal stability, capable of withstanding processing temperatures up to 1300 K. These properties enable it to withstand harsh fabrication environments that typical polymer substrates cannot tolerate.

Second, the vdW heteroepitaxy platform enables the direct epitaxial growth of a wide variety of functional materials. Unlike conventional epitaxy that requires strong chemical bonding and strict lattice matching, vdW epitaxy relies on weak intermolecular forces. This growth mechanism significantly relaxes lattice-matching constraints, enabling the epitaxially integrated growth of diverse high-quality functional materials—ranging from transparent conducting oxides and ferroelectrics to semiconductors and magnetic materials—onto the two-dimensional layered mica substrate.

Third, the weak vdW interaction at the film–substrate interface enables effortless mechanical separation. The epitaxial overlayers can be easily peeled from the mica substrate, mitigating the substrate-clamping effect and creating unconstrained, freestanding functional thin films. Crucially, because muscovite cleaves perfectly along its vdW gap without leaving surface dangling bonds, the mechanically separated films exhibit pristine, atomic-level flatness at the interface.

By unifying superior mechanical flexibility, broad material compatibility, and the ability to produce atomically flat freestanding films, van der Waals heteroepitaxy on muscovite provides an unparalleled foundation for soft technology and advanced flexible sensors, actuators, and smart electronic systems.

### PROFESSIONAL BIOGRAPHY

Professor Ying-Hao Chu is a faculty member in the Department of Materials Science & Engineering at National Tsing Hua University. His research focuses on complex oxide heterostructures, nanostructures and interfaces for next-generation devices, oxide mesocrystals, high-entropy functional materials, flexible and transparent oxide electronics (“MICAtronics”), and oxide electronics for smart-window applications.

His research has received numerous distinctions, including the 69th Academic Award of the Ministry of Education (2025), appointment as Micron Chair Professor (2025), Fellowship of the Materials Research Society Taiwan (2024), and Outstanding Research Awards from the National Science & Technology Council in 2017 and 2023.

Professor Chu has also been recognized as a Thomson Reuters Highly Cited Researcher in 2014, 2016, 2018, and 2019. His additional honors include the Taiwan Physical Society Outstanding Paper Award, Materials Science Scientific Paper Award of the Materials Research Society Taiwan, Engineering Research Paper Award of the Chinese Institute of Engineers, Academia Sinica Research Award for Junior Research Investigators, Futuristic Breakthrough Technology Award, Wu Ta-You Memorial Award, and several young-researcher and nanotechnology awards.

# PLENARY SESSION 5

WEDNESDAY, SEPTEMBER 23 • 17:15–18:15



PROFESSOR

**Teri W. Odom**

Joan Husting Madden and William H. Madden,  
Jr. Professor of Chemistry

Northwestern University

*Evanston, Illinois, USA*

## UNCONVENTIONAL NANOCAVITIES FOR LIGHT-MATTER INTERACTIONS

### ABSTRACT

Optical chirality from spin angular momentum and orbital angular momentum offers exciting prospects to manipulate light and is driving advances in communication, encryption, and sensing.

This talk will describe the design of unconventional optical cavities based on plasmonic nanoparticle lattices. First, we will discuss two-dimensional planar architectures based on global control of lattice symmetry and local tuning of unit-cell shapes. Second, we will examine strong light-matter interactions mediated by these nanocavities. Finally, we will describe coherent polariton emission and prospects for room-temperature chiral polaritonics and flat-band lasing.

### PROFESSIONAL BIOGRAPHY

Teri W. Odom is the Joan Husting Madden and William H. Madden, Jr. Professor of Chemistry at Northwestern University. She earned her B.S. in Chemistry from Stanford University and her Ph.D. in Chemical Physics from Harvard University.

Professor Odom is an expert in designing structured nanoscale materials that exhibit extraordinary size- and shape-dependent optical and physical properties.

She is a Member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences. She is also a Fellow of the American Chemical Society (ACS), Royal Society of Chemistry (RSC), American Physical Society, Materials Research Society, American Institute of Medical and Biological Engineering, Optica, and the American Association for the Advancement of Science, and is a Senior Member of SPIE.

Her selected honors include the SPIE Mozi Award, the RSC Centenary Prize, the ACS National Award in Surface Science, a Department of Defense Vannevar Bush Faculty Fellowship, an NIH Director's Pioneer Award, and a Guggenheim Fellowship.

Professor Odom was the founding chair of the Gordon Research Conference on Noble Metal Nanoparticles and is Editor-in-Chief of *Nano Letters*.



# PLENARY SESSION 6

THURSDAY, SEPTEMBER 24 • 10:45–11:45



PROFESSOR

**Patrick M. Woodward**

Department of Chemistry and Biochemistry

The Ohio State University

Columbus, Ohio, USA

## THE SEARCH FOR NEW PHOSPHORS AND WIDE BANDGAP SEMICONDUCTORS

### ABSTRACT

In this talk I will discuss our efforts to discover new wide bandgap materials that possess favorable optical properties. The first half of the talk will focus on metal halides with perovskite or perovskite-related structures that emit various colors of visible light, without the incorporation of rare-earth ions.

The incorporation of  $\text{Mn}^{2+}$  as an activator results in bright red emission, when coupled with a suitable sensitizer. The incorporation of  $\text{Sb}^{3+}$  leads to emission wavelengths ranging from blue to green to red, depending on the local environment of the  $\text{Sb}^{3+}$  ion.

The second half of the talk focuses on mixed anion compounds, either oxide fluoride or nitride fluoride, that have wide band gaps and disperse conduction bands that are well suited for application as transparent conductors and photocatalysts.

### PROFESSIONAL BIOGRAPHY

Patrick Woodward received B.S. degrees in Chemistry and General Engineering from Idaho State University in 1991, and an M.S. degree in Materials Science and a Ph.D. in Chemistry from Oregon State University in 1996, where he studied under Professor Arthur Sleight.

He was a postdoctoral researcher in the Physics Department at Brookhaven National Laboratory from 1996 to 1998 before joining the faculty at The Ohio State University in 1998, where he currently is the Newman Professor of Chemistry and Biochemistry.

He served as Associate Editor of the *Journal of Solid State Chemistry* from 2006 to 2011 and Vice President of the Neutron Scattering Society of America from 2014 to 2018.

Professor Woodward has been recognized as an NSF CAREER Fellow (2001), an Alfred P. Sloan Fellow (2004), and a Fellow of the American Chemical Society (2020). He has also held visiting faculty positions at the University of Bordeaux (2005), University of Sydney (2007), Durham University (2017–2018), and Kyoto University (2025).

He is co-author of two widely used textbooks, *Chemistry: The Central Science* and *Solid State Materials Chemistry*.

# PLENARY SESSION 7

THURSDAY, SEPTEMBER 24 • 16:45–17:45



PROFESSOR

**Daniel R. Killelea**

Department of Chemistry & Biochemistry

Loyola University Chicago

Chicago, IL, USA

## SUBSURFACE OXYGEN IN HETEROGENEOUS CATALYSIS

### ABSTRACT

Heterogeneously catalyzed reactions over transition metal surfaces have attracted much investigation over the years both for their significance in large-scale industrial processes and their mysterious nature on the molecular scale. Despite widespread use there remains a significant gap in our understanding of even the most apparently “simple” heterogeneously catalyzed reactions. The reasons are myriad and fundamentally come down to the fact that seemingly minor details strongly affect the reaction rate.

Our work has focused on how the structure of defects and the presence of subsurface oxygen affect the chemistry of transition metal surfaces. Using single-crystal metals with periodic defects (e.g., known step widths and densities), we probe how step width and geometry influence surface-catalyzed oxidation reactions. Furthermore, the ability to obtain velocity distributions of molecules desorbing from surfaces with both high temporal precision and angular resolution provides new insight into the kinetics and dynamics of oxidation reactions, recombinative desorption, and subsurface emergence.

I will discuss our observations of the influence of subsurface oxygen on CO oxidation on both Rh(111) and Rh(332), and how the velocity distributions of the product CO<sub>2</sub> shift when subsurface oxygen is present. The potential impacts of these observations on oxidation reactions in heterogeneous catalysis over transition-metal surfaces will also be discussed.

### PROFESSIONAL BIOGRAPHY

Dan Killelea is a Professor in the Department of Chemistry & Biochemistry and Associate Dean for Grants in the College of Arts & Sciences at Loyola University Chicago. His research focuses on the chemical properties of metallic surfaces relevant to heterogeneous catalysis, with particular interest in how the relationships between surface structure and chemistry evolve upon oxidation and with increasing oxygen incorporation into the near-surface region.

Originally from Milwaukee, he received his B.S. in Chemistry from the University of Wisconsin–Milwaukee in 2000. He completed his Ph.D. in Chemistry at Tufts University in 2007 with Art Utz and subsequently held a postdoctoral position at The University of Chicago with Steve Sibener. He began his independent career at Loyola University Chicago in 2011.

Killelea has been active in AVS at both the national and local levels. He served as AVS 66 Program Vice-Chair and AVS 67 Program Chair, was a member of the AVS Board of Directors from 2020–2022, and became an AVS Fellow in 2023. He currently serves as Secretary/Treasurer for the AVS Surface Science Division and Chair of the International Interactions Committee.

As Associate Dean for Grants, he works with grant holders and applicants in the College of Arts & Sciences on proposal development, submission, and award management.

# PLENARY SESSION 8

FRIDAY, SEPTEMBER 25 • 10:45–11:45



CNRS RESEARCHER

**José Ordoñez-Miranda**

Institut des Nanosciences de Paris (INSP)

Sorbonne Université • CNRS

Paris, France

## EXPERIMENTAL DEVELOPMENT OF THERMAL DIODES, TRANSISTORS AND MEMRISTORS

### ABSTRACT

In this plenary talk, I will present our recent experimental results obtained for the rectification, amplification, and memory of radiative thermal currents driven by the hysteretic insulator–metal transition (IMT) of  $\text{VO}_2$ .

In the first part, I will experimentally demonstrate the thermal rectification of the radiative heat flux between a  $\text{VO}_2$  film and a heat fluxmeter when their temperature difference is reversed. By testing three  $\text{VO}_2$  films deposited on r-sapphire, c-sapphire, and silicon, the highest rectification factor of 61% is obtained for the first film. This value is consistent with theoretical predictions and shows that rectification can be enhanced by increasing the emissivity variations between the insulating and metallic phases of  $\text{VO}_2$  films, as well as by decreasing their emissivity in the metallic phase.

In the second part, I will present the experimental realization of a radiative thermal transistor capable of amplifying far-field heat currents. This three-terminal device exploits the IMT of  $\text{VO}_2$  thin films deposited on both surfaces of a substrate using pulsed laser deposition (PLD). The phase transition induces a sharp variation in the infrared emissivity of the  $\text{VO}_2$ /substrate/ $\text{VO}_2$  system, acting as the transistor base between two heat-flux sensors serving as emitter and collector.

Substrates of r-cut and c-cut sapphire and  $\text{Si/SiO}_2$  are considered to optimize the thermal performance. Measurements show that the transistor implemented with a  $\text{VO}_2$ /r-sapphire base yields the highest amplification factor of 126, underscoring the critical role of substrate selection and the potential of radiative thermal transistors for advanced thermal management.

In the third part, I will present the laboratory operation of a radiative thermal memristor made of a  $\text{VO}_2$  nanofilm exchanging heat by far-field thermal radiation with a heat-flux sensor. This two-terminal device exploits both the IMT and thermal hysteresis of  $\text{VO}_2$  grown on silicon by PLD. The transition produces large emissivity variations and a hysteresis width of 5 K around a mean temperature of  $T_0 = 338.7$  K.

Under low-frequency sinusoidal modulation of the  $\text{VO}_2$  temperature around  $T_0$ , a pinched, infinity-shaped Lissajous curve is observed for heat flux as a function of temperature difference. The resulting history-dependent thermal memristance exhibits clear ON and OFF states defined by the emissivity contrast between the insulating and metallic phases. These states remain robust over multiple cycles, enabling binary information encoding in a purely radiative configuration.

Our experimental results therefore demonstrate the operation of contactless thermal diodes, transistors, and memristors, which represent the fundamental elements of thermotronics by analogy with electronics.

### PROFESSIONAL BIOGRAPHY

José Ordoñez-Miranda is a CNRS researcher at the Institut des Nanosciences de Paris (INSP), a research unit of CNRS and Sorbonne Université. His research focuses on heat transport driven by phonons, photons, electrons, and polaritons propagating in nano-, micro-, and macro-scale materials, with applications in thermopolaritronics, thermotronics, electronics, photonics, thermoelectricity, and thermal management.

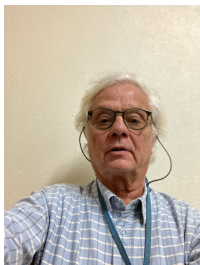
His research encompasses the prediction of new physical effects and the design of thermal devices; the development of analytical and semi-analytical models for extracting thermal properties from experimental data; and the modeling and measurement of thermal and optical properties of phase-change materials and particulate composites.

### SELECTED REFERENCES

- [1] I. Y. Forero-Sandoval et al., *Phys. Rev. Applied* **14**, 034023 (2020).
- [2] I. Alonzo-Zapata et al., *Phys. Rev. Applied* **24**, L031001 (2025).
- [3] J. A. Chan Espinoza et al., *Experimental development of a radiative thermal memristor*.

# PLENARY SESSION 9

FRIDAY, SEPTEMBER 25 • 11:45–12:45



PROFESSOR

**Emmanuel Haro Poniatowski**

Department of Physics

Universidad Autónoma Metropolitana Iztapalapa

Mexico City, Mexico

## SYNTHESIS OF NANOSTRUCTURED GLASSES AND GELATINS BY LASER ABLATION

### ABSTRACT

In this talk I will present some recent results on the synthesis of nanostructured glasses and gelatins prepared by laser ablation in non-conventional liquids. This can be achieved by combining the sol-gel process and laser ablation simultaneously.

The results mainly involve Au nanoparticles, although the same concept can be applied to a broad variety of elements and compounds. For the glasses, tetraethyl orthosilicate (TEOS) and water with hydrochloric acid as a catalyst are used to prepare the starting medium before ablation. Commercial neutral gelatin powder and hot water are employed to synthesize the gelatins.

A Nd:YAG laser emitting at 1064 nm, with an energy of 100 mJ at a repetition rate of 10 Hz and focused on a 2 mm diameter laser spot in the nanosecond regime, is used to perform the laser ablation. The Au target is covered in a vessel containing the corresponding liquid.

After gelation, the glasses and gelatins are dried. The gelatins dry in a few days, while the drying process for the glasses can take several months. The resulting samples are characterized by optical absorption, transmission electron microscopy (TEM), and atomic force microscopy (AFM). Some potential applications will also be discussed.

### PROFESSIONAL BIOGRAPHY

Emmanuel Haro Poniatowski completed his undergraduate studies in Physics at Universidad Autónoma Metropolitana Iztapalapa in Mexico City and his graduate studies at Université Pierre et Marie Curie Paris 6 in France, where he received the Doctorat d'État ès Sciences in 1986.

He has been a researcher and invited professor at Thomson-CSF in France, the University of California, Irvine, and the Universities Paris 5, Paris 6, and Paris 7. More recently, he has collaborated with the Laser Processing Group at the Spanish National Research Council (CSIC) in Madrid, Spain.

His research has focused on Raman spectroscopy of solids and laser ablation, and he has published more than 170 articles related to these fields. Since 1987, he has developed his academic career in the Department of Physics at Universidad Autónoma Metropolitana Iztapalapa.

### REFERENCES

- [1] Mexican Patent No. 415245, MX/a/2018/016188.
- [2] E. Haro-Poniatowski et al., arXiv preprint arXiv:2601.10889.



# SHORT COURSE I

## INTRODUCTION TO DIGITAL IC DESIGN: FROM RTL TO GDSII

### COURSE OVERVIEW

This introductory course provides a comprehensive overview of the digital integrated circuit (IC) design flow, guiding participants from Register Transfer Level (RTL) design to the generation of the final GDSII layout. Through a hands-on approach, students will learn the fundamental concepts and methodologies used in modern ASIC development, bridging the gap between hardware description and its physical realization. The course covers the complete open-source RTL-to-GDS workflow, structured through the following toolchain: **Digital Design & Verification, Logic Synthesis, and Physical Design & Layout.**

All laboratory exercises are based on 100% open-source tools, enabling participants to gain practical, reproducible experience without requiring commercial software licenses. By the end of the course, students will understand how abstract digital logic is transformed into the geometric patterns and material layers that define a physical microelectronic device.

### INSTRUCTORS

#### INSTRUCTOR



#### Arturo Torres Sánchez

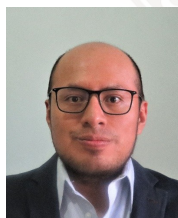
Centro de Nanociencias y Micro y Nanotecnologías  
Instituto Politécnico Nacional

Arturo Torres Sánchez received the Ph.D. degree in Science with a specialization in Electronics from the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), México, in 2021. He is currently a Postdoctoral Researcher at the Centro de Nanociencias y Micro y Nanotecnologías (CNMN) of the Instituto Politécnico Nacional (IPN), Mexico.

His research interests focus on the modeling, simulation, fabrication, and characterization of thin-film devices based on metal oxides, particularly amorphous Indium–Gallium–Zinc Oxide (a-IGZO), for integration into analog and digital circuits on flexible substrates.

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#### INSTRUCTOR



#### Isai Salvador Hernández-Luna

National Laboratory of Micro and Nanotechnology  
CNMN-IPN

Isai Salvador Hernández-Luna holds a Ph.D. in Science with a specialization in Electrical Engineering from Cinvestav-IPN. He is a Guest Researcher at the National Laboratory of Micro and Nanotechnology (LN $\mu$ nT) of the Center for Nanosciences and Micro and Nanotechnologies (CNMN-IPN).

His research interests focus on the design, fabrication, modeling, and characterization of semiconductor devices, integrated circuits, and thin-film electronics, with an emphasis on thin-film transistors (TFTs), two-dimensional (2D) materials, and flexible electronics. He is a member of the Institute of Electrical and Electronics Engineers (IEEE) and the Electron Devices Society (EDS).

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# SHORT COURSE II

## HANDS-ON WORKSHOP

### QUANTITATIVE SPECTRAL ANALYSIS WITH AANALYZER

*From Peak Fitting to the Layer Model: XPS, Raman, and Luminescence*

#### INSTRUCTOR



#### Alberto Herrera Gómez

##### SENIOR RESEARCHER

Ph.D. in Science (1994)

Stanford University, USA

**E-mail:** aherrera@cinvestav.mx

[cia.qro.cinvestav.mx/~aherrera/web/index.html](http://cia.qro.cinvestav.mx/~aherrera/web/index.html)

#### RESEARCH LINES

- Physical origin of the Shirley background
- Angle-Resolved X-ray Photoelectron Spectroscopy (ARXPS)
- Early stages of metal oxidation
- Nanofilm processing
- Correlation between the electrical properties of MOS devices and their physicochemical structure

#### WHAT THIS WORKSHOP IS ABOUT

Quantitative interpretation of a spectrum rests on decomposing it into physically meaningful components. In practice, peak fitting is one of the main bottlenecks in quantitative analysis: it requires expert judgment to decide how many components are present, what line shapes they have, what background is required, and how their parameters should be constrained. The result tends to be subjective and difficult to reproduce.

This hands-on workshop introduces a set of free tools designed to address that problem directly. The centerpiece is **AAnalyzer**, which fits the raw data using the *Active Background Approach* rather than subtracting a background before fitting.

The workshop also covers **AAutoFit**, an expert system that automates construction of the fitting model; **AACanvas**, for producing publication-quality figures; and **AAMultiLayer**, which converts peak areas into the thicknesses and composition of a layered sample.

The emphasis is on XPS, where the method is most fully developed, but the peak-fitting approach and the tools also apply to Raman and luminescence spectra, and examples of both will be shown.

#### TOPICS

**AAnalyzer –the essentials.** Loading spectra, energy calibration, proposing components, choosing line shapes, and fixing, freeing, and correlating parameters. The Active Background Approach and its importance for the areas reported. Simultaneous fitting of several spectra and uncertainties on fitted parameters.

**AAutoFit –the expert system.** An inference engine that analyzes the spectrum, proposes an initial model, and iteratively adds, removes, and constrains components through physically grounded heuristic rules while driving a Levenberg–Marquardt optimizer.

**AACanvas –the figures.** Building publication figures directly from the fits, including multiple panels, imported curves, error bars, and annotations.

**AAMultiLayer –from areas to a layer model.** Fitting layer thicknesses and stoichiometric coefficients from peak areas measured as a function of take-off angle, including effective attenuation lengths and laterally coexisting layers.

**Complete examples.** End-to-end analysis of XPS, Raman, and luminescence spectra.

#### IMPORTANT: INSTALL THE SOFTWARE BEFORE THE WORKSHOP

The workshop is hands-on and is intended to be followed on your own computer. Participants should install the software in advance.

**AAnalyzer is essential** and should be installed and launched before attending. **AAMultiLayer** is required for the final part of the workshop.

Bring a Windows laptop and charger. If your institution requires IT approval or administrator privileges for software installation, begin that process well in advance.

**Software:** [xpsocasis.org/download](http://xpsocasis.org/download)



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# SCIENTIFIC PROGRAM

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## International Conference

on Surfaces, Materials and Vacuum

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MÉRIDA • YUCATÁN • MÉXICO

September 21-25, 2026

**SOCIEDAD MEXICANA DE CIENCIA Y TECNOLOGÍA  
DE SUPERFICIES Y MATERIALES**

SMCTSM

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# MONDAY, SEPTEMBER 21

## SCIENTIFIC PROGRAM

**09:00-10:00**      **OPENING CEREMONY**

**10:00-10:15**      **IN MEMORIAM**  
**Dr. Stephen Muhl and Dr. Roberto Machorro Mejia**

**10:15-10:30**      **Official Launch of *Átomo × Átomo -- Materiales Novedosos***  
A science outreach magazine of the Sociedad Mexicana de Ciencia y Tecnología de Superficies y Materiales (SM-CTSM), dedicated to the dissemination of topics related to materials, surfaces, nanotechnology, and related fields.

**10:30-10:45**      **COFFEE BREAK & EXHIBITS**

**10:45-11:45**

**PLENARY SESSION 1**

**LAUREATE PROFESSOR**

**Ajayan Vinu**

**NANOSTRUCTURED CARBON: SHAPING THE FUTURE OF ENERGY, ENVIRONMENT AND SUSTAINABILITY**

**Global Innovative Center for Advanced Nanomaterials, University of Newcastle, Australia**

## ORAL PRESENTATIONS

**BLOCK 1**

**11:45-12:15**      **ID: 94**      **REN**

**SIMPLE MODEL FOR FULLY DEPLETED NANO-WIRE RADIAL JUNCTION SOLAR CELLS**

**Arturo Morales-Acevedo**

**12:15-12:30**      **ID: 360**      **REN**

**UNLOCKING EFFICIENCY: THE ROLE OF NIOX ANNEALING IN INVERTED PEROVSKITE SOLAR CELLS**

**Diecenia Peralta Dominguez**

**12:30-12:45**

**ID: 272**

**REN**

**IMPROVEMENT OF THE PHOTOVOLTAIC PROPERTIES OF CZTS THIN FILMS DEPOSITED BY RF MAGNETRON SPUTTERING**

**Irving Adrian Castellanos Alvarez**

**12:45-13:00**

**ID: 366**

**REN**

**STUDY ON THE EFFECT OF POST-DEPOSITION PROCESSES ON THE QUALITY OF  $\text{Sb}_2\text{Se}_3$  THIN FILMS FOR PHOTOVOLTAIC APPLICATIONS**

**Carlos Iván Sosa Rosado**

**13:00-13:15**

**ID: 408**

**REN**

**TIME-OPTIMIZED SOL-GEL-ASSISTED HYDROTHERMAL SYNTHESIS OF  $\text{SrTiO}_3$  FOR DYE-SENSITIZED SOLAR CELLS**

**Roberto Carlos Avilés Betanzos**

**11:45-12:15**

**ID: 104**

**THF**

**ADDITIVE AND SURFACE CONTROL OF ELECTROLESS NANOSTRUCTURE DEPOSITION**

**Amy Walker**

**12:15-12:30**

**ID: 25**

**THF**

**OXYGEN ADSORPTION/DESORPTION PROCESSES AND GAS SENSING POTENTIAL OF  $\text{MoO}_2$  THIN FILMS**

**Raidel Blanco Cardentey**

**12:30-12:45**

**ID: 33**

**THF**

**SYNERGISTIC GREEN ANTISOLVENT ENGINEERING AND CATION MIXING FOR AMBIENT-AIR FABRICATION OF PHOTOACTIVE MIXED-CATION PEROVSKITE FILMS**

**Mario Hidrogo**

**12:45-13:00**

**ID: 58**

**THF**

**STUDY OF THE OPTICAL PROPERTIES OF  $\text{NbN}_x$  THIN FILMS DEPOSITED BY REACTIVE MAGNETRON SPUTTERING: ANALYSIS OF THE SYNTHESIS PROCESS**

**Brenda Miranda Guevara**



13:00-13:15

ID: 68

THF

ROOM-TEMPERATURE SPUTTERED ITO ON  
TRANSPARENT WOOD SUBSTRATES FOR SOLAR CELLS  
APPLICATIONS

Itzel Polanco-Ortiz

11:45-12:00

ID: 12

BIO

TRANSPARENT WOOD AS BIO-BASED GLAZING FOR  
THERMAL COMFORT: FROM SCALE-MODEL TESTING  
TO HIGH-PERFORMANCE NUMERICAL DESIGN

David Andres Canto Reyes

12:00-12:15

ID: 67

BIO

FUNGI BIOCOMPOSITES FORMED BY  $\text{Fe}_3\text{O}_4$   
NANOPARTICLES AND ENTOMOPATHOGENIC FUNGI  
AS MAGNETOSENSITIVE, AND RADIOTROPIC  
BIO-HYBRIDS

Ulises Salazar Kuri

12:15-12:30

ID: 95

BIO

OPTICAL CHARACTERIZATION OF OPUNTIA  
FICUS-INDICA TENDER CLADODES

Ivan Rodrigo Santacruz Bravo

12:30-12:45

ID: 109

BIO

CORRELATION BETWEEN MECHANICAL PROPERTIES  
AND CORROSION LEVEL IN MAGNESIUM SPECIMENS  
COATED WITH  $\text{TiO}_2$

Gonzalo Lezo Lopez

12:45-13:00

ID: 128

BIO

DEVELOPMENT OF A SODIUM ALGINATE AQUEOUS  
INK CONTAINING  $\text{Eu}^{3+}$ -DOPED  $\text{YPO}_4$  NANOPARTICLES

María del Rosario González García

13:00-13:15

ID: 140

BIO

DESIGN AND EVALUATION OF GRANZYME-B LOADED  
ALBUMIN NANOPARTICLES FOR CANCER  
IMMUNOTHERAPY

Pabela María Barraza Duarte

**11:45-12:15**

**ID: 208**

**AQMC**

**AAUTOFIT: AN EXPERT SYSTEM FOR THE AUTOMATIC  
PEAK FITTING OF SPECTRA**

**Alberto Herrera Gómez**

**12:15-12:30**

**ID: 11**

**AQMC**

**ELECTROTHERMAL ACTUATION AND SENSING OF  
ADDITIVELY MANUFACTURED COMPOSITES**

**Diana Elizabeth Chab Contreras**

**12:30-12:45**

**ID: 250**

**AQMC**

**CHEMICAL CHARACTERIZATION OF  
CARBON-PASSIVATED TITANIUM THIN FILMS BY XPS  
FOR OXIDATION PROTECTION**

**Samantha Perez**

**12:45-13:00**

**ID: 22**

**AQMC**

**OXIDATION DEGREE AS A KEY PARAMETER FOR  
GRAPHENE DERIVATIVES ELECTRICAL PERFORMANCE**

**Abraham Méndez Reséndiz**

**13:00-13:15**

**ID: 268**

**AQMC**

**CHEMICAL AND INTERFACIAL CHARACTERIZATION OF  
HfO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, AND ZrO<sub>2</sub> THIN FILMS BY ARXPS**

**Javier González**

**13:15-15:00**

**LUNCH BREAK**

**ORAL PRESENTATIONS**

**BLOCK 2**

**15:00-15:30**

**ID: 290**

**REN**

**ELECTRIC FIELD-ASSISTED FLASH SINTERING  
DEVELOPMENT IN ION CONDUCTORS AND  
INSULATOR-ION CONDUCTOR COMPOSITES**

**Jean-Claude M'PEKO**

15:30-15:45

ID: 264

REN

VANADIUM OXIDE THIN FILMS AS ADVANCED  
NANO-CRYSTALLINE CATALYSTS FOR  
PHOTO-ELECTROCHEMICAL GREEN HYDROGEN  
PRODUCTION

Pastor Alan Rodríguez Echeverría

15:45-16:00

ID: 119

REN

OPTIMIZATION OF SPUTTERING DEPOSITION  
PARAMETERS OF  $\text{LiCOO}_2$  CATHODE FOR LITHIUM-ION  
BATTERIES

Cesia Daniela Mena-Muñoz

16:00-16:15

ID: 302

REN

REACTIVE SPUTTERING-DRIVEN ENHANCEMENT OF  
ELECTROCHEMICAL PERFORMANCE IN  
 $\text{LiNi}_x\text{Mn}_y\text{Co}_z\text{O}_2$  THIN-FILM CATHODES

Austine Odiwuor Amisi

16:15-16:30

ID: 421

REN

LITHIUM-ION DIFFUSION IN  $\text{LiCoPO}_4$  CATHODE  
MATERIAL: AN AB INITIO MOLECULAR DYNAMICS  
STUDY BASED ON MEAN SQUARE DISPLACEMENT

Jesus L. A. Ponce-Ruiz

15:00-15:15

ID: 118

THF

FLIPPING THE SWITCH ON TIN SULFIDE DEPOSITION:  
FROM SNS TO SNS

Christopher Brewer

15:15-15:30

ID: 112

THF

GROWTH AND INTEGRATION OF  $\text{CSPBBR}_3$  PEROVSKITE  
SINGLE CRYSTALS ON 1D PHOTONIC CRYSTALS AND  
MICROCAVITIES

Dalia Zoé Velázquez García

**15:30-15:45**

**ID: 199**

**THF**

**EFFECT OF THERMAL ANNEALING ON THE  
STRUCTURAL AND OPTICAL PROPERTIES OF CUBIC  
IN<sub>x</sub>GA<sub>1-x</sub>N THIN FILMS**

**Erik Antonio Arroyo Sosa**

**15:45-16:00**

**ID: 200**

**THF**

**MAGNETRON-SPUTTERED CUFEMONI  
MEDIUM-ENTROPY ALLOY THIN FILMS:  
ENTROPY-DRIVEN ELECTROCATALYSIS OF  
BENZALDEHYDE REDUCTION**

**Uriel Cardenas Rojas**

**16:00-16:15**

**ID: 343**

**THF**

**ALGORITHM IMPLEMENTATION FOR THE INVERSE  
PROBLEM IN ELLIPSOMETRY**

**Francisco Alberto Amador Ramirez**

**16:15-16:30**

**ID: 428**

**THF**

**PHOTODETECTION IN DEVICES BASED ON  
CARBON-BASED NANOMATERIALS AND SILICON  
OXIDES**

**Gabriel Omar Mendoza Conde**

**15:00-15:15**

**ID: 154**

**BIO**

**STUDY OF THE MECHANICAL PROPERTIES OF  
MATERIALS BASED ON AUXETIC GEOMETRIES  
PRINTED WITH POLYPROPYLENE FILAMENTS  
REINFORCED WITH GRAPHENE OXIDE FOR  
ORTHOPEDIC APPLICATIONS**

**Darian Cuellar Jimenez**

**15:15-15:30**

**ID: 163**

**BIO**

**STRUCTURAL AND MECHANICAL EVALUATION OF  
ELECTROSPUN POLYAMIDE 6,6 NANOFIBERS FOR  
BIOMEDICAL APPLICATIONS**

**Fabrizio Sosa Castillo**

**15:30-15:45**

**ID: 188**

**BIO**

**PALYGORSKITE-NANOREINFORCED HYBRID  
BIODEGRADABLE POLYMER MICROSPHERES FOR  
CLIMATE-SMART AGRICULTURE APPLICATIONS**

**J Manuel Vázquez Rodríguez**

**15:45-16:00**

**ID: 192**

**BIO**

**COMPARATIVE CHARACTERIZATION OF  
TRANSPARENT WOOD FROM Balsa (Ochroma  
pyramidale) AND Chaká (BURSERA SIMARUBA)**

**Raúl Pareja-Rodríguez**

**16:00-16:15**

**ID: 278**

**BIO**

**XPS ANALYSIS DATA OF MALATHION ASSOCIATION  
WITH CYSTEINE-FUNCTIONALIZED SILICA**

**Milton Vázquez Lepe**

**16:15-16:30**

**ID: 297**

**BIO**

**TRANSPARENT WOOD WITH ANTIMONY-DOPED TIN  
OXIDE (ATO) COATINGS AS SMART WINDOWS FOR  
INFRARED BLOCKING, ENERGY EFFICIENCY, AND  
THERMAL COMFORT IN BUILDINGS**

**Reyes Alfonso Hernández Castillo**

**15:00-15:15**

**ID: 355**

**AQMC**

**CHEMICAL-STATE ANALYSIS OF THE W 4F  
PHOTOEMISSION SPECTRA OF METALLIC AND  
PARTIALLY OXIDIZED TUNGSTEN USING COUPLED  
RESONANCES**

**Orlando Cortazar Martinez**

**15:15-15:30**

**ID: 241**

**AQMC**

**STUDY OF THE SEGREGATION OF A BISMUTH-RICH  
LAYER ON THE SURFACE OF SOL-GEL BIFEO<sub>3</sub> FILMS**

**Carolina Janani Diliegros Godines**

**15:30-15:45**

**ID: 115**

**AQMC**

**SYNTHESIS AND CHARACTERIZATION OF BISMUTH  
CUPRATE (BSCCO) FOR APPLICATIONS IN  
SUPERCONDUCTING QUBITS**

**Carlos Ivan Campa Flores**



15:45-16:00

ID: 14

AQMC

**INTRINSIC SELF-HEALING MECHANISMS IN  
NANOCOMPOSITE COATINGS REINFORCED WITH  
TiO<sub>2</sub>-SiO<sub>2</sub> NANOPARTICLES**

**Martin Bladimir Cocom Dzul**

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16:00-16:15

ID: 165

AQMC

**CELLULOSE ACETATE/WS<sub>2</sub> NANOFIBROUS  
MEMBRANES: MORPHOLOGICAL, STRUCTURAL AND  
SURFACE CHARACTERIZATION FOR PHOTOCATALYTIC  
WATER TREATMENT**

**Susana Meraz Dávila**

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16:15-16:30

ID: 18

AQMC

**EFFECT OF GRAPHENE OXIDE CONCENTRATION ON  
FIBER FORMATION AND MORPHOLOGY OF  
ELECTROSPUN CELLULOSE ACETATE**

**Beatriz Reyes Veloz**

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16:30-16:45

**COFFEE BREAK & EXHIBITS**

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16:45-17:45

**PLENARY SESSION 2**

**Masakazu Kobayashi**

**Department of Electrical Engineering and Bioscience  
Waseda University, Tokyo, Japan**

**MOLECULAR BEAM EPITAXY GROWTH OF  
SEVERELY LATTICE MISMATCHED TE COMPOUNDS  
AND THEIR CRYSTALLOGRAPHIC  
CHARACTERIZATIONS USING XRD POLE FIGURE  
MEASUREMENT**

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18:00-20:00

**WELCOME COCKTAIL**

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# TUESDAY, SEPTEMBER 22

## ORAL PRESENTATIONS

09:00-09:15

ID: 164

REN

CORRELATIVE RAMAN, AFM, SEM AND HAADF-STEM CHARACTERIZATION OF CVD-GROWN MOS<sub>2</sub> DOMAINS FOR HYDROGEN-RELATED ENERGY APPLICATIONS

OSVALDO de Melo PEREIRA

09:15-09:30

ID: 124

REN

EFFECT OF BALL-TO-POWDER RATIO ON THE ADSORPTION PERFORMANCE OF MOLYBDENUM-BASED NANOMATERIALS FOR METHYLENE BLUE REMOVAL

Araceli Flores Conde

09:30-09:45

ID: 252

REN

FORMATION OF CSPBBR<sub>3</sub> THIN FILMS FROM ELECTRODEPOSITED PBO<sub>2</sub>: INFLUENCE OF IMMERSION AND SPIN-COATING CONVERSION

Marco de Jesús Cetina Dorantes

09:45-10:00

ID: 415

REN

SQUARE  $\gamma$ -ALUMINA NANOPARTICLES AS A ZIRCONIA REPLACEMENT IN CARBON-BASED PEROVSKITE SOLAR CELLS

Diecenia Peralta-Dominguez

10:00-10:15

ID: 442

REN

GRAPHITE NANOPARTICLE ELECTRON-SELECTIVE LAYERS ENABLING EFFICIENT ORGANIC SOLAR CELLS

Magaly Ramírez Como

10:15-10:30

ID: 99

REN

DEVELOPMENT OF PHTHALOCYANINE SEMICONDUCTOR FILMS APPLIED TO GREEN ELECTRONICS

Héctor Iván Sánchez Moore

09:00-09:15 ID: 7 LP

TAILORING DEFECTS AND STRUCTURAL DISPERSION  
IN CRYSTALLIZED  $\text{Lu}_2\text{O}_3:\text{TM}^{3+}$  AEROGELS FOR  
ENHANCED BLUE EMISSION

Alan Daniel Alcantar Mendoza

09:15-09:30 ID: 20 LP

LUMINESCENCE IN  $\text{YVO}_4:\text{Eu}^{3+}$  PHOSPHOR IN GLASS  
(PIG): DICTATED BY GORILLA® GLASS HOST

Abisay Cuevas Ramirez

09:30-09:45 ID: 23 LP

ONE SINGLE-STEP SYNTHESIS OF  $\text{K}_2\text{TlF}_6:\text{Mn}^{4+}$ : A BRIEF  
LUMINESCENCE STUDY

Javier Mendoza Sánchez

09:45-10:00 ID: 27 LP

$\text{Dy}^{3+}$  DOPED  $\text{Al}_2(\text{WO}_4)_3$  EMBEDDED IN COMMERCIAL  
GLASS FOR TUNABLE WHITE-LIGHT EMISSION FROM  
COOL TO NEUTRAL WHITE

Piero Alessandro Pérez Ramos

10:00-10:15 ID: 35 LP

EVALUATION OF THE  $\text{B}_2\text{O}_3$ -CAO BINARY SYSTEM  
GLASSES FOR LUMINESCENCE APPLICATIONS

Sadam Hussain

10:15-10:30 ID: 40 LP

BLUE AND COLD WHITE LIGHT COLOR EMISSION  $\text{Ag}_m^{n+}$   
CLUSTERS AND  $\text{TM}^{3+}$  ACTIVATED  $\text{ZnO-P}_2\text{O}_5$  GLASSES  
ACHIEVED UNDER NEAR ULTRAVIOLET LIGHT  
EXCITATION

Montserrat Mijangos Joachin

09:00-09:30 ID: 194 SEM

EFFECT OF CR AND NI DOPING ON THE OPTICAL AND  
TRANSPORT PROPERTIES OF PYRITE THIN FILMS  
OBTAINED VIA SULFURIZATION OF MULTI-METALLIC  
THIN FILMS

Javier Melchor Trujeque Gil

09:30-09:45

ID: 46

SEM

EFFECT OF SUBSTRATE TRANSFER SPEED ON THE SILAR DEPOSITION OF CUS-COVELLITE THIN FILMS

Axel Agustín Ortiz Atondo

09:45-10:00

ID: 175

SEM

FABRICATION OF CTS/CDS P-N HETEROJUNCTION USING LOW-COST SPIN COATING AND SILAR SYSTEMS

Yehoshua Juárez Elías

10:00-10:15

ID: 197

SEM

SYNTHESIS AND CHARACTERIZATION OF  $CD_{1-x}Zn_xS$  THIN-FILMS BY SPRAY PYROLYSIS USING ZINC ACETATE AND ZINC CHLORIDE AS A PRECURSOR

Sanya Yanin González Caceres

10:15-10:30

ID: 228

SEM

IMPLEMENTATION OF A LOW-COST OPTICAL PROJECTION PHOTOLITHOGRAPHY SYSTEM FOR SEMICONDUCTOR PROCESSING

Pedro Antonio Vera Gallegos

09:00-10:30

COURSE I

INTRODUCTION TO DIGITAL IC DESIGN: FROM RTL TO GDSII

Isaí S. Hernández-Luna

Arturo T. Sánchez

10:30-10:45

COFFEE BREAK & EXHIBITS

10:45-11:45

PLENARY SESSION 3

Professor Manuel Quevedo

Department of Materials Science and Engineering

Center for Harsh Environment Semiconductor and Systems (CHESS)

The University of Texas at Dallas

SEMICONDUCTOR MATERIALS AND SENSOR TECHNOLOGIES FOR HARSH ENVIRONMENT SYSTEMS

11:45-13:15

SPECIAL SESSION

## Desarrollo del sector de semiconductores en México y sureste de México

La mesa panel de Semiconductores tiene como objetivo ser un espacio de diálogo estratégico que reúne a representantes del gobierno, la academia y la industria para analizar las oportunidades del sector de semiconductores en México y el sureste del país.

En esta mesa panel se cuenta con la participación de autoridades estatales, investigadores de la Universidad de Texas y de la UADY, así como representantes de CANIETI del estado de Yucatán, quienes aportarán una visión integral sobre el desarrollo de esta industria.

Durante el evento se abordan temas clave como las tendencias globales, el nearshoring, la formación de talento especializado y la vinculación entre universidades, gobierno e industria.

La relevancia del simposio radicará en impulsar acciones que permitan posicionar al sureste del país como un polo de innovación, diseño tecnológico y atracción de inversiones. Asimismo, se buscará identificar estrategias para fortalecer las capacidades científicas y tecnológicas del país, y construir una hoja de ruta que favorezca la integración de Yucatán al ecosistema nacional e internacional de semiconductores.

## WEDNESDAY, SEPTEMBER 23

07:00-08:30

4TH  
RACE

ATHLETIC

CONFERENCE

### ORAL PRESENTATIONS

BLOCK 1

09:30-10:00

ID: 17

SEM

INTERFACIAL CHARGE TRANSFER AND BAND ALIGNMENT IN ZINC OXIDE/HEMATITE BILAYER: LINKING ELECTRONIC STRUCTURE TO PHOTOCATALYTIC PERFORMANCE

Ana Luisa Martínez García

10:00-10:15

ID: 103

SEM

MICROWAVE-SYNTHESIZED  $\text{Bi}_2\text{O}_3/\text{G-C}_3\text{N}_4$  AND  $\text{KBiO}_3/\text{G-C}_3\text{N}_4$  COMPOSITES FOR PHOTOCATALYTIC WATER REMEDIATION

Teresa Montalvo Herrera



10:15-10:30

ID: 224

SEM

CHARACTERIZATION OF A SAW TRANSDUCER FOR  
BIOSENSING APPLICATIONS USING FREQUENCY  
RESPONSE ANALYSIS

Pablo Daniel Cordero García

10:30-10:45

ID: 225

SEM

STRUCTURAL AND LOCAL ELECTROMECHANICAL  
CHARACTERIZATION OF PEALD-GROWN  $Al_{1-x}Sc_xN$   
THIN FILMS

Mauricio Huixtlaca

10:45-11:00

ID: 322

SEM

ATOMIC-SCALE INTERFACE ENGINEERING OF  
 $Ga_2O_3$ /MGO MEMRISTORS FOR NEUROMORPHIC  
APPLICATIONS

Joaquin Alvarado

09:30-09:45

ID: 49

LP

PREPARATION AND PERFORMANCE EVALUATION OF  
GREEN-EMITTING  $Zn_2SiO_4:Mn^{2+}$  PHOSPHOR-IN-GLASS  
(PIGS)

Rosendo Lozada Morales

09:45-10:00

ID: 50

LP

THERMOLUMINESCENCE PROPERTIES OF  
 $CaMOO_4:DY^{3+}$  UNDER UV AND BETA IRRADIATION  
FOR DOSIMETRIC APPLICATIONS

Andrés Alfonso Saavedra Romero

10:00-10:15

ID: 60

LP

LUMINESCENT PROPERTIES OF  $Sr_3(V_{1-x}Mn_xO_4)_2$  FOR  
NIR APPLICATIONS

Maria Lyzeth Lopez Toxqui

**10:15-10:30**

**ID: 75**

**LP**

**EFFECT OF SYNTHESIS TEMPERATURE ON THE  
STRUCTURAL AND LUMINESCENT PROPERTIES OF  
RARE-EARTH-DOPED MATERIALS**

**María Fernanda Rodríguez**

**10:30-10:45**

**ID: 110**

**LP**

**OPTICAL AND LUMINESCENT CHARACTERIZATION OF  
RARE-EARTH ACTIVATED PHOSPHORS FOR  
SOLID-STATE LIGHTING APPLICATIONS**

**José Luis Hernández**

**10:45-11:00**

**ID: 168**

**LP**

**PHOTOLUMINESCENCE PROPERTIES OF  
RARE-EARTH-DOPED OXIDE MATERIALS FOR  
PHOTONIC APPLICATIONS**

**Alejandro Martínez García**

**09:30-09:45**

**ID: 81**

**SDMH**

**SYNTHESIS AND CHARACTERIZATION OF ADVANCED  
MATERIALS FOR SUSTAINABLE DEVELOPMENT  
APPLICATIONS**

**Carlos Alberto González**

**09:45-10:00**

**ID: 84**

**SDMH**

**DEVELOPMENT AND CHARACTERIZATION OF  
FUNCTIONAL MATERIALS FOR ENVIRONMENTAL AND  
ENERGY APPLICATIONS**

**Ana Karen López**

**10:00-10:15**

**ID: 98**

**SDMH**

**STRUCTURAL AND FUNCTIONAL CHARACTERIZATION  
OF SUSTAINABLE MATERIALS FOR TECHNOLOGICAL  
APPLICATIONS**

**Luis Fernando Pérez**

10:15-10:30

ID: 157

SDMH

THIN FILMS PRODUCED BY A NOVEL CYLINDRICAL  
HOT REFRACTORY ANODE VACUUM ARC SYSTEM  
(CHRAVA)

Ivan Camps

10:30-10:45

ID: 179

SDMH

EFFECT OF PROBE MATERIAL ON PLASMA  
DIAGNOSTICS DURING PULSED LASER DEPOSITION

Laura Patricia Rivera Reséndiz

10:45-11:00

ID: 205

SDMH

UNIFYING STRUCTURE AND SYNTHESIS: STEVE  
MUHL'S ENDURING LEGACY IN CARBON NITRIDE THIN  
FILMS

Sandra Elizabeth Rodil Posada

09:30-11:00

COURSE I

INTRODUCTION TO DIGITAL IC DESIGN: FROM  
RTL TO GDSII

Isaí S. Hernández-Luna  
Arturo T. Sánchez

11:00-11:15

COFFEE BREAK & EXHIBITS

11:15-12:15

PLENARY SESSION 4

Professor Ying-Hao Chu

Department of Materials Science & Engineering  
National Tsing Hua University

UNLEASHING THE POTENTIAL OF VAN DER WAALS  
HETEROEPITAXY ON MUSCOVITE FOR  
NEXT-GENERATION FLEXIBLE ELECTRONICS

# ORAL PRESENTATIONS

BLOCK 2

12:15-12:45

ID: 384

SEM

ASYMMETRIC BAND ENGINEERING ENCAPSULATION OF SEMICONDUCTOR ZERO-DIMENSIONAL NANOSTRUCTURES

Víctor Hugo Méndez García

12:45-13:00

ID: 248

SEM

DOUBLE-LAYER DIELECTRIC OXIDE ANTIREFLECTION COATINGS FOR III-V QUANTUM DOT SEMICONDUCTOR SUPRACRYSTALS

Arely Michelle Puente Rivera

13:00-13:15

ID: 292

SEM

INFLUENCE OF GROWTH INTERRUPTIONS ON STRAIN COMPENSATION IN III-N-V SEMICONDUCTORS HETEROSTRUCTURES

Pedro Antonio Vera Gallegos

13:15-13:30

ID: 190

SEM

TEMPERATURE-DRIVEN MICROSTRUCTURAL EVOLUTION OF AMORPHOUS-SEMICONDUCTOR FE-O-S THIN FILMS VIA CHEMICAL BATH DEPOSITION

Jose Pablo Estrella Leyva

13:30-13:45

ID: 405

SEM

GATE DIELECTRIC INFLUENCE ON CURRENT COLLAPSE AND THRESHOLD VOLTAGE INSTABILITY IN GAN MIS-HEMTS UNDER OFF-STATE STRESS

Andres Aguirre

12:15-12:30

ID: 209

LP

LUMINESCENT TRANSPARENT WOOD BASED ON ZNO NANOPARTICLES FOR SUSTAINABLE PHOTONIC APPLICATIONS

Rubén Rafael Zaragoza Arellano

**12:15-12:30**

**ID: 219**

**LP**

**STRUCTURAL, COMPOSITIONAL, AND KINETIC STUDY OF THE THERMOLUMINESCENCE OF ZNS:MN<sup>2+</sup> NANOPARTICLES FOR DOSIMETRIC APPLICATIONS**

**Perla Rodríguez Ortega**

**12:45-13:00**

**ID: 287**

**LP**

**INFLUENCE OF OXYGEN PARTIAL PRESSURE ON THE PHOTOLUMINESCENCE OF PLD-GROWTH ZNO NANOSTRUCTURES**

**Mónica Martínez**

**13:00-13:15**

**ID: 293**

**LP**

**EFFECT OF LI<sup>+</sup> CODOPING ON STRUCTURE AND LUMINESCENT PROPERTIES OF ER<sup>3+</sup>/YB<sup>3+</sup>/TM<sup>3+</sup>-DOPED GD<sub>2</sub>O<sub>3</sub> NANOPARTICLES**

**Irvin Daniel Villar Gutiérrez**

**13:15-13:30**

**ID: 310**

**LP**

**OPTICAL SPECTROSCOPY OF NOVEL SODIUM-RICH BORATE GLASSES DOPED WITH ND<sup>3+</sup>/YB<sup>3+</sup>**

**Omar Soriano Romero**

**13:30-13:45**

**ID: 376**

**LP**

**LUMINESCENCE PROPERTIES OF THE PHOSPHORUS HALIDE CS<sub>3</sub>BI<sub>2</sub>CL<sub>9</sub> ACTIVATED WITH MN<sup>2+</sup>**

**Cristina Rodriguez Guijarro**

**12:15-12:45**

**ID: 400**

**SDMH**

**THE ROLE OF AMORPHOUS CARBON(S) IN UNDERSTANDING CARBON DOTS PROPERTIES**

**Alberto Tagliaferro**

**12:45-13:00**

**ID: 182**

**SDMH**

**TARGET POISONING STUDIES IN REACTIVE MAGNETRON SPUTTERING: A DR. STEPHEN MUHL REMEMBRANCE**

**Roberto Sangines**



**13:00-13:15**

**ID: 235**

**SDMH**

**BEYOND THE CONVENTIONAL (002) TEXTURE:  
NON-EQUILIBRIUM GROWTH AND THERMAL  
STABILITY OF (101)-ORIENTED ZNO THIN FILMS**

**José Guadalupe Quiñones Galván**

**13:15-13:30**

**ID: 276**

**SDMH**

**THIN FILMS SURFACE MODIFICATIONS ON  
BIOMATERIALS TO ENHANCE ANTIMICROBIAL  
PERFORMANCE. A SPECIAL GRATITUDE TO STEVEN  
MUHL.**

**Argelia Almaguer-Flores**

**13:30-13:45**

**ID: 374**

**SDMH**

**MICROWAVE PLASMA NITRIDED AUSTENITIC AISI-304  
STAINLESS STEEL**

**Enrique Camps**

**12:15-13:45**

**COURSE I**

**INTRODUCTION TO DIGITAL IC DESIGN: FROM  
RTL TO GDSII**

**Isaí S. Hernández-Luna  
Arturo T. Sánchez**

**13:45-15:30**

**LUNCH BREAK**

**ORAL PRESENTATIONS**

**BLOCK 3**

**15:30-16:00**

**ID: 277**

**SEM**

**GROWTH OF ZINC-BLEND DILUTED NITRIDE  
QUATERNARY ALLOY (ALGANAS) THROUGH  
RF-PLASMA ASSISTED MOLECULAR BEAM EPITAXY**

**Daniel López Vilchis**

**16:00-16:15**

**ID: 399**

**SEM**

**FABRICATION AND CHARACTERIZATION OF  
INGAN/GAN MULTIPLE QUANTUM WELLS DEPOSITED  
BY PLASMA-ENHANCED ATOMIC LAYER DEPOSITION**

**Dylan Tepatzi**

**16:15-16:30**

**ID: 299**

**SEM**

**AG<sub>2</sub>SE/AG-BASED THIN FILMS AND COMPOSITES FOR  
THERMOELECTRIC APPLICATIONS**

**Ma. Estela Calixto Rodriguez**

**16:30-16:45**

**ID: 196**

**SEM**

**INFLUENCE OF SOLVENT COMPOSITION ON DEFECT  
ENGINEERING AND NANOSTRUCTURE EVOLUTION IN  
SPRAY PYROLYZED ZNO THIN FILMS FOR GAS SENSING  
APPLICATIONS**

**Romina Solar Carvalho**

**16:45-17:00**

**ID: 263**

**SEM**

**GROWTH DYNAMICS AND COMPOSITIONAL ANALYSIS  
OF CUBIC INGAN/GAN QUANTUM WELLS ON (001) SIC  
UNDER DIFFERENT RF NITROGEN PLASMA  
CONDITIONS BY MME**

**Edgar Contreras**

**15:30-15:45**

**ID: 42**

**LP**

**DEFECT-RELATED PHOTOLUMINESCENCE IN KMgF<sub>3</sub>  
THIN FILMS DEPOSITED BY MODIFIED SPRAY  
PYROLYSIS**

**José Iván Olivera Ruiz**

**15:45-16:00**

**ID: 51**

**LP**

**DEVELOPMENT OF RED-EMITTING YVO<sub>4</sub>:EU<sup>3+</sup>  
PHOSPHOR IN GLASS (PIGS) COMPOSITES**

**Salvador Carmona Téllez**

**16:00-16:15**

**ID: 134**

**LP**

**SYNTHESIS OF LUMINESCENT METAL-ORGANIC FRAMEWORKS FOR APPLICATION IN TEXTILE POLYMERS**

**Gilberto Alarcón-Flores**

**16:15-16:30**

**ID: 145**

**LP**

**A CROWN ETHER-AMMONIUM SUPRAMOLECULAR PLATFORM FOR LUMINESCENT  $[Cu_4I_6]^{2-}$  CLUSTER PHOSPHORS**

**Disnel Ferrera**

**16:30-16:45**

**ID: 367**

**LP**

**TAILORING THE OPTICAL RESPONSE OF LEAD-FREE DOUBLE PEROVSKITES VIA SOLVENT-FREE COPPER DOPING**

**Bibiana Rodríguez García**

**16:45-17:00**

**ID: 407**

**LP**

**DEVELOPMENT AND CHARACTERIZATION OF SODIUM-ZINC PHOSPHATE GLASSES DOPED WITH  $DY^{3+}/TB^{3+}$  AND  $DY^{3+}/TB^{3+}/EU^{3+}$  FOR OPTOELECTRONICS APPLICATIONS**

**Evelyn Fernanda Huerta Cuevas**

**15:30-15:45**

**ID: 237**

**SDMC**

**GROWTH OF HIGHLY TEXTURED THIN FILMS OF THE MULTIFERROIC  $PB(Fe_{0.5}Nb_{0.5})O_3$  BY RF-SPUTTERING CONTROLLED BY OPTICAL SPECTROSCOPY**

**Noemi Abundiz-Cisneros**

**15:45-16:00**

**ID: 240**

**SDMC**

**ELLIPSOMETRY SPECTROSCOPY OF FILMS GROWTH BY SOFT CHEMISTRY METHODS**

**Carolina Janani Diliegros-Godines**

16:00-16:15

ID: 423

SDMC

INFLUENCE OF SUBSTRATE TEMPERATURE ON THE REFRACTIVE INDEX, SURFACE ROUGHNESS, AND STRUCTURE OF TANTALUM NITRIDE THIN FILMS

Manuel Enrique Guevara Vera

16:15-16:30

ID: 414

SDMC

OPTICAL PROPERTIES OF LOADED ZEOLITES

Catalina Lopez Bastidas

16:30-16:45

ID: 97

SDMC

MODELING OF SILICON OXIDE FORMATION IN REACTIVE SPUTTER DEPOSITION ALONGSIDE DR. ROBERTO MACHORRO

Julio César Cruz Cárdenas

16:45-17:00

ID: 244

SDMC

DESIGN AND INITIAL EXPERIMENTAL RESULTS ON OXYGEN-FREE STACKED MIM NANOSTRUCTURES WITH DOUBLE EPSILON NEAR-ZERO RESPONSE

Francisco Javier Flores-Ruiz

15:30-17:00

TECHNICAL TALK

THE INFLUENCE OF THERMO FISHER IN THE DEVELOPMENT OF XPS COMMUNITY IN MEXICO

ISASA

17:00-17:15

COFFEE BREAK & EXHIBITS

17:15-18:15

PLENARY SESSION 5

PROFESSOR

Teri W. Odom

Northwestern University

UNCONVENTIONAL NANOCAVITIES FOR LIGHT-MATTER INTERACTIONS

# WEDNESDAY, SEPTEMBER 23

## POSTER SESSION I

18:15-20:15

### RENEWABLE ENERGY: MATERIALS AND DEVICES [REN]

ID-218 ID-330 ID-341 ID-73  
ID-80 ID-334 ID-89 ID-349  
ID-123 ID-386 ID-391 ID-398  
ID-416 ID-172 ID-198 ID-253  
ID-234 ID-345 ID-301 ID-433  
ID-431 ID-331 ID-41 ID-344  
ID-352 ID-100 ID-114 ID-369  
ID-142 ID-388 ID-186 ID-210  
ID-247 ID-312

### BIOMATERIALS AND POLYMERS [BIO]

ID-350 ID-87 ID-410 ID-406  
ID-342 ID-83 ID-37 ID-86  
ID-91 ID-230 ID-236 ID-267  
ID-36 ID-316 ID-256 ID-358  
ID-282 ID-147 ID-8 ID-381

### THIN FILMS [THF]

ID-66 ID-138 ID-266 ID-418  
ID-108 ID-121 ID-332 ID-185  
ID-203 ID-201 ID-215 ID-184  
ID-254 ID-359 ID-211 ID-214  
ID-227 ID-300 ID-258 ID-372  
ID-32 ID-371 ID-28 ID-74  
ID-143 ID-169 ID-443

### ADVANCED AND QUANTITATIVE MATERIALS CHARACTERIZATION [AQMC]

ID-284 ID-271 ID-56 ID-78  
ID-105 ID-160 ID-420 ID-308  
ID-191 ID-288 ID-304 ID-261  
ID-347 ID-338 ID-285 ID-122  
ID-130 ID-146 ID-189 ID-158  
ID-393

### SEMICONDUCTORS [SEM]

ID-4 ID-5 ID-6 ID-15 ID-53 ID-144 ID-311  
ID-251 ID-255 ID-279 ID-289 ID-340 ID-348 ID-117  
ID-356 ID-222 ID-380 ID-317 ID-76 ID-96 ID-212  
ID-216 ID-245 ID-339 ID-364 ID-365 ID-395



# THURSDAY, SEPTEMBER 24

## ORAL PRESENTATIONS

BLOCK 1

09:00-09:30

ID: 93

NS

FORMATION OF CARBON-NANOSTRUCTURED PERCOLATIVE NETWORKS IN POLYMERS AND ITS APPLICATIONS

Francis Avilés Cetina

09:30-09:45

ID: 3

NS

INFLUENCE OF DOPING ON THE STRUCTURAL AND ELECTRONIC PROPERTIES OF CVD-GROWN MOLYBDENUM DISULFIDE NANOSTRUCTURES

Daniela Lucio Rosales

09:45-10:00

ID: 13

NS

NANOPOROUS STRUCTURE AS MULTIFUNCTIONAL MATERIAL

Guadalupe Izamar Delgado Angeles

10:00-10:15

ID: 82

NS

ANISOTROPIC MAGNETIC RESPONSE IN  $\text{SiO}_2$  PATTERNS VIA 1 MEV NI IMPLANTATION

Cristian Felipe Cruz García

10:15-10:30

ID: 90

NS

MORPHOLOGICAL EVOLUTION AND OPTICAL RESPONSE OF GE MICROCONES GROWN ON SI BY PULSED LASER DEPOSITION

Francisco Javier Altamirano García

09:00-09:30

ID: 38

MEMS

ADVANCED SILICON MEMS TECHNOLOGIES FOR HIGH-PERFORMANCE SENSORS AND ACTUATORS

Miguel Ángel Reyes Barranca

09:15-09:30

ID: 101

MEMS

SIMULATION AND MICROFABRICATION OF PRESSURE SENSORS FOR APPLICATIONS IN MEDIUM TO HIGH PRESSURE ENVIRONMENTS

Carlos Augusto Lopez Lazcano

09:30-09:45

ID: 120

MEMS

RELIABILITY AND BIAS STRESS ANALYSIS OF FLEXIBLE IGZO THIN-FILM TRANSISTORS ON SOFTENING POLYMERS

Gerardo Gutierrez-Heredia

09:45-10:00

ID: 221

MEMS

RESISTIVE SWITCHING OF IGZO AND IGZO/MOON<sub>x</sub> BASED MEMRISTORS

Norberto Hernandez Como

10:00-10:15

ID: 229

MEMS

AUTOMATED SPICE MODEL EXTRACTION IN PYTHON FOR THE SIMULATION AND OPTIMIZATION OF IGZO/HFO<sub>2</sub>-BASED LOGIC CIRCUITS

Marco Miguel Gonzalez

10:15-10:30

ID: 257

MEMS

ELECTRICAL RESPONSE OF P-NIO/N-ZNO HETEROJUNCTIONS TO GAS CONCENTRATIONS UNDER DIFFERENT VOLTAGE BIAS

Ivonne Julieta Silva Contreras

09:00-09:30

ID: 427

TSI

BIOGENIC EGGSHELL-DERIVED HYDROXYAPATITE/ $\alpha$ , $\beta$ -TRICALCIUM PHOSPHATE CERAMICS: POWDER SYNTHESIS AND LOW-TEMPERATURE AC-HVAF THERMAL SPRAYED COATINGS

Carolina Hernández Navarro

**09:30-09:45**

**ID: 30**

**TSI**

**NANOSTRUCTURED COAXIAL TRIBOELECTRIC DEVICES FOR LOW-FREQUENCY KINETIC ENERGY HARVESTING**

**Jesus Osvaldo Sanchez Castro**

**09:45-10:00**

**ID: 159**

**TSI**

**FABRICATION AND ELECTRICAL CHARACTERIZATION OF MON- $\text{Al}_2\text{O}_3$ -AU SUPERCONDUCTOR-INSULATOR-NORMAL METAL TUNNEL JUNCTIONS**

**Julio Guadalupe Moctezuma Ramírez**

**10:00-10:15**

**ID: 48**

**TSI**

**TAILORING MECHANICAL PROPERTIES OF SPUTTER-DEPOSITED TI-AL-ZR METALLIC GLASS COATINGS VIA MOLYBDENUM ADDITION**

**Uriel Jiron Lazos**

**10:15-10:30**

**ID: 202**

**TSI**

**TIALN-BASED COATING ARCHITECTURES FOR ENHANCED SOLID PARTICLE EROSION RESISTANCE**

**Benjamin Millan Ramos**

**09:00-09:15**

**ID: 378**

**ASPPV**

**ADVANCES, TRENDS, AND FUTURE PERSPECTIVES IN ATOMIC LAYER DEPOSITION ADVANCES OF HIGH-K DIELECTRIC MATERIALS: A REVIEW**

**Pierre Giovanni Mani González**

**09:15-09:30**

**ID: 324**

**ASPPV**

**ENGINEERING ZNO/GRAPHENE PHOTOELECTRODES VIA PLASMA-ENHANCED ATOMIC LAYER DEPOSITION ON 3D-PRINTED ARCHITECTURES**

**Edgar Homero Ramirez Soria**

**09:30-09:45**

**ID: 61**

**ASPPV**

**PRELIMINARY ANALYSIS OF THE PHYSICAL PROPERTIES OF THIN FILMS OBTAINED FROM THE ABLATION OF SR IN OXYGEN ATMOSPHERES**

**Pablo Agustín Calderón Franco**

**09:45-10:00**

**ID: 70**

**ASPPV**

**EFFECT OF PLASMA AND VACUUM CONDITIONS ON THE SPUTTERING SYNTHESIS OF NBO THIN FILMS**

**Manuel de Jesús Mota Hernández**

**10:00-10:15**

**ID: 286**

**ASPPV**

**STUDY OF ION AND ELECTRON ENERGY DISTRIBUTIONS IN A PARALLEL-PLATE GLOW DISCHARGE USING RFEA AND OES**

**Omar Alejandro Soto Cabral**

**10:15-10:30**

**ID: 323**

**ASPPV**

**STUDY OF THE PHOTOVOLTAIC RESPONSE OF ITO/CDS/CDTE:AL/CUTE THIN-FILM HETEROSTRUCTURES PREPARED BY RF SPUTTERING**

**Miguel Melendez-Lira**

**10:30-10:45**

**COFFEE BREAK & EXHIBITS**

**10:45-11:45**

**PLENARY SESSION 6**

**PROFESSOR**

**Patrick M. Woodward**

**Department of Chemistry and Biochemistry**

**The Ohio State University**

**THE SEARCH FOR NEW PHOSPHORS AND WIDE BANDGAP SEMICONDUCTORS**

## ORAL PRESENTATIONS

BLOCK 2

11:45-12:00

ID: 111

NS

SYNTHESIS AND 11-MUA FUNCTIONALIZATION OF ANISOTROPIC GOLD NANOPARTICLES FOR BIOSENSING

Said Josue Zerqueda Gordillo

12:00-12:15

ID: 129

NS

TUNING CATALYTIC SITES IN AU/MESOPOROUS SILICA CATALYST FOR HIGHLY EFFICIENT HYDROGENATION OF 4-NITROPHENOL

Siva Kumar Krishnan

12:15-12:30

ID: 361

NS

INFLUENCE OF THE MICROSTRUCTURE OF MAGNETIC NANOPARTICLES ON THE HYPERTHERMIA PHENOMENON

Angela Matias Silva

12:30-12:45

ID: 133

NS

MORPHOLOGICAL AND STRUCTURAL PROPERTIES OF INAS NANOWIRES ON GRAPHENE

Jessica Surisadai Rodríguez Aguilar

12:45-13:00

ID: 413

NS

NAOH EXFOLIATION OF  $\text{TiO}_2$  FOR ENHANCED DISPERSION STABILITY IN NANOLUBRICANTS

Maria Fernanda Meza Enriquez

13:00-13:15

ID: 379

NS

EPITAXIAL GROWTH DYNAMICS OF INAS QUANTUM DOTS ON SINGULAR AND HIGH-INDEX CRYSTALLOGRAPHIC ORIENTATIONS

Maria Fernanda Mora Herrera



**11:45-12:00**

**ID: 318**

**MEMS**

**MONOLITHIC COMMON-GATE CMOS INVERTER BASED ON IGZO AND SNO THIN-FILM TRANSISTORS**

**Isai Salvador Hernandez Luna**

**12:00-12:15**

**ID: 336**

**MEMS**

**SIMULATION OF MEMS LOW-PRESSURE SENSORS WITH POLYETHYLENE TEREPHTHALATE DIAPHRAGM UNDER LARGE DEFLECTION THEORY**

**Victor Samuel Balderrama Vazquez**

**12:15-12:30**

**ID: 351**

**MEMS**

**GEOMETRICAL OPTIMIZATION OF A 13.56 MHZ WIRELESS POWER TRANSFER SYSTEM FOR AN IMPLANTABLE INTRA-ARTERIAL PRESSURE SENSOR**

**Victor Manuel Carpio Verdin**

**12:30-12:45**

**ID: 353**

**MEMS**

**ROOM TEMPERATURE DEPOSITION OF ITO THIN FILMS OVER A LARGE AREA FOR MICROELECTRONICS**

**Angel Regalado Contreras**

**12:45-13:00**

**ID: 363**

**MEMS**

**LASER-ABLATED ZNO:N THIN-FILM TRANSISTORS OVER LARGE AREAS: COMPARISON BETWEEN  $\text{SiN}_x$  AND  $\text{Al}_2\text{O}_3$  GATE DIELECTRICS**

**Angel Regalado Contreras**

**13:00-13:15**

**ID: 389**

**MEMS**

**HYBRID ZNO BASED NANOSTRUCTURED PLATFORMS FOR ELECTROCHEMICAL, RESISTIVE AND OPTICAL SENSING DEVICES**

**José Fredi Robles-Vázquez**

**11:45-12:00**

**ID: 424**

**TSI**

**HYSTERESIS OF THE CONTACT ANGLE AND CRITICAL SLIP VOLUME IN MICRO AND NANOSTRUCTURED COPPER AND CARBON SURFACES FOR APPLICATIONS IN ATMOSPHERIC WATER HARVESTING**

**Veronica Cristel Vázquez De la Cruz**

**12:00-12:15**

**ID: 409**

**TSI**

**MORPHOLOGICAL AND MECHANICAL  
CHARACTERIZATION OF BORIDING LAYERS ON AISI O1  
STEEL FOR AGRICULTURAL COMPONENTS**

**Ivan Esteban Iniesta Moctezuma**

**12:15-12:30**

**ID: 54**

**TSI**

**THERMAL STABILITY, OXIDATION BEHAVIOR AND  
TRIBOLOGICAL PERFORMANCE OF  
MAGNETRON-SPUTTERED WS<sub>2</sub> THIN FILMS**

**Juan Manuel González Carmona**

**12:30-12:45**

**ID: 102**

**TSI**

**MICROSTRUCTURAL HETEROGENEITY, MECHANICAL  
RESPONSE AND TRIBOLOGICAL PERFORMANCE OF  
TIALVON COATINGS DEPOSITED BY TWIN WIRE ARC  
SPRAYING**

**Mauricio Nango Blanco**

**12:45-13:00**

**ID: 307**

**TSI**

**TRIBOLOGICAL PERFORMANCE DURING RUNNING-IN  
OF A STEEL EHD CONTACT IN STEEL LUBRICATED  
WITH GLYCEROL AND OLEIC ACID AS AN ADDITIVE**

**Luis Antonio Márquez-Alonso**

**13:00-13:15**

**ID: 441**

**TSI**

**DEMONSTRATION OF COHERENT EFFECTS IN LIPSS  
FORMATION**

**Inam Mirza**

**11:45-13:15**

**TECHNICAL TALK**

**ORAL PRESENTATIONS**

**BLOCK 3**

**15:00-15:30**

**ID: 72**

**NS**

**FIGHTING BREAST CANCER WITH CARBON  
NANOSTRUCTURES: MULTISCALE MODELING OF  
GRAPHYNE NANOCARRIERS FOR DRUG DELIVERY**

**César Quej Solís**

**15:30-15:45**

**ID: 171**

**NS**

**EVALUATION OF NI/CO-DOPED  $\text{SnO}_2$ :F/ZNS  
HETEROSTRUCTURES FOR APPLICATIONS**

**Brenda Alejandra Hernández Rodríguez**

**15:45-16:00**

**ID: 329**

**NS**

**NANOENGINEERED  $\text{ZnO}/\text{TiO}_2$  HETEROSTRUCTURES  
FABRICATED BY PLASMA-ENHANCED ATOMIC LAYER  
DEPOSITION ON 3D-PRINTED ARCHITECTURES FOR  
 $\text{CO}_2$  CONVERSION**

**Edgar Homero Ramirez Soria**

**16:00-16:15**

**ID: 193**

**NS**

**SUSTAINABLE FABRICATION OF METALLIC  
NANOSTRUCTURES BY ELECTRODEPOSITION IN DEEP  
EUTECTIC SOLVENTS FOR ADVANCED SENSING  
APPLICATIONS**

**Rafael Villamil Carreon**

**16:15-16:30**

**ID: 238**

**NS**

**SUBSTRATE-RICH AND SUBSTRATE-FREE GAN THIN  
FILMS OBTAINED BY ALD AND MBE**

**Cuitlahuac Mójica Sobrevilla**

**15:00-15:15**

**ID: 315**

**CTDMI**

**ELECTRONIC STRUCTURE OF ALUMINIUM NITRIDE IN  
THE ZINBLNDE STRUCTURE OBTAINED USING THE  
DFT+U+V APPROACH**

**David de Jesús López Chi**

**15:15-15:30**

**ID: 437**

**CTDMI**

**ELECTRONIC STRUCTURE AND ELECTROCATALYTIC  
DESCRIPTORS IN NI-LAYERED HYDROXIDES FOR THE  
OXYGEN EVOLUTION REACTION**

**Carlos Manuel Ramos Castillo**

15:30-15:45

ID: 24

CTDMI

THERMODYNAMIC STABILIZATION OF  
ANTIFERROMAGNETISM VIA NON-PERTURBATIVE  
INTERLAYER EXCHANGE

Brandon Pedroza Rojas

15:45-16:00

ID: 291

CTDMI

THE SAMARIUM NITRIDE DEPOSIT ON MAGNESIUM  
OXIDE SURFACE

Sandra Julieta Gutierrez Ojeda

16:00-16:15

ID: 319

CTDMI

ELECTRONIC STRUCTURE AND MAGNETISM IN  
TWO-DIMENSIONAL MATERIALS BASED-ON FUSED  
CLAR'S GOBLETS: A FIRST-PRINCIPLES CALCULATIONS  
STUDY

Luis Fernando Garcia Uc

COURSE II

15:00-16:30

Quantitative Spectral Analysis with AAnalyzer

Alberto Herrera Gómez

15:00-16:30

TECHNICAL TALK

16:30-16:45

COFFEE BREAK & EXHIBITS

16:45-17:45

PLENARY SESSION 7

PROFESSOR

Daniel R. Killelea

Department of Chemistry & Biochemistry

Loyola University Chicago

Chicago, IL, USA

SUBSURFACE OXYGEN IN HETEROGENEOUS  
CATALYSIS

20:30

GALA DINNER

# THURSDAY, SEPTEMBER 24

## POSTER SESSION II 17:45-19:45

### LUMINESCENCE PHENOMENA: MATERIALS AND APPLICATIONS [LP]

ID-223 ID-167 ID-309 ID-335  
ID-394 ID-419 ID-10 ID-392  
ID-88 ID-92 ID-155 ID-213

### TRIBOLOGY, SURFACES AND INTERFACES [TSI]

ID-1 ID-273 ID-113 ID-139  
ID-181 ID-243 ID-259 ID-283  
ID-337 ID-107 ID-45 ID-126  
ID-373 ID-106

### NANOSTRUCTURES [NS]

ID-63 ID-156 ID-176 ID-19  
ID-411 ID-65 ID-422 ID-55  
ID-59 ID-152 ID-412 ID-274  
ID-183 ID-161 ID-77 ID-44  
ID-34 ID-29 ID-16 ID-116  
ID-132 ID-21 ID-43 ID-170  
ID-333 ID-166 ID-177 ID-440  
ID-195 ID-220 ID-296 ID-325  
ID-9 ID-375 ID-434 ID-357  
ID-402 ID-362 ID-368 ID-435  
ID-377 ID-387

### MICROELECTRONICS AND MEMS [MEMS]

ID-320 ID-26 ID-153 ID-57  
ID-62 ID-135 ID-141 ID-233  
ID-246 ID-281 ID-298 ID-305  
ID-326

### ATOMIC-SCALE PROCESSING, PLASMA, AND VACUUM [ASPPV]

ID-204 ID-327 ID-382 ID-149  
ID-180 ID-226 ID-346 ID-131  
ID-174

### COMPUTATIONAL AND THEORETICAL DESIGN OF MATERIALS AND INTERFACES [CTDMI]

ID-217 ID-417 ID-127 ID-137  
ID-150 ID-151 ID-69 ID-85  
ID-125 ID-136 ID-148 ID-231  
ID-275 ID-239 ID-173 ID-206  
ID-396 ID-207 ID-270 ID-295  
ID-52 ID-313 ID-321 ID-354  
ID-401 ID-397



# FRIDAY, SEPTEMBER 25

## ORAL PRESENTATIONS

- |                                                                                                                                                          |                |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|
| <b>09:00-09:15</b>                                                                                                                                       | <b>ID: 242</b> | <b>NS</b> |
| <b>FIRST EVIDENCE OF GAAS NANOCOLUMN FORMATION BY CSVT USING METAL DROPLET CATALYSIS</b>                                                                 |                |           |
| <b>Marco Antonio Ramírez Orozco</b>                                                                                                                      |                |           |
| <hr/>                                                                                                                                                    |                |           |
| <b>09:15-09:30</b>                                                                                                                                       | <b>ID: 249</b> | <b>NS</b> |
| <b>APPLICATIONS IN NANOSTRUCTURES OF INGAN ATOMIC PARTIAL LAYER DEPOSITION APLD</b>                                                                      |                |           |
| <b>Iván Alejandro Jasso Granja</b>                                                                                                                       |                |           |
| <hr/>                                                                                                                                                    |                |           |
| <b>09:30-09:45</b>                                                                                                                                       | <b>ID: 260</b> | <b>NS</b> |
| <b>SI RING META-ATOMS FOR ULTRAVIOLET RADIATION</b>                                                                                                      |                |           |
| <b>David Zárate Villegas</b>                                                                                                                             |                |           |
| <hr/>                                                                                                                                                    |                |           |
| <b>09:45-10:00</b>                                                                                                                                       | <b>ID: 265</b> | <b>NS</b> |
| <b>COMPUTATIONAL ANALYSIS OF THE INFLUENCE OF CONDUCTIVE NETWORK MORPHOLOGY ON THE THERMORESISTIVE SENSITIVITY OF CARBON NANOTUBE/POLYMER COMPOSITES</b> |                |           |
| <b>Arturo Sebastian Ayala Ruano</b>                                                                                                                      |                |           |
| <hr/>                                                                                                                                                    |                |           |
| <b>10:00-10:15</b>                                                                                                                                       | <b>ID: 269</b> | <b>NS</b> |
| <b>FROM MATERIAL EVALUATION TO GAS DETECTION VIA GRAPHENE/DIELECTRIC HETEROSTRUCTURES</b>                                                                |                |           |
| <b>Uriel Alcides Torices Saucedo</b>                                                                                                                     |                |           |
| <hr/>                                                                                                                                                    |                |           |
| <b>10:15-10:30</b>                                                                                                                                       | <b>ID: 425</b> | <b>NS</b> |
| <b>SYNTHESIS OF ZNWO<sub>4</sub> BASED HETEROJUNCTIONS FOR PHOTOCATALYTIC APPLICATIONS IN HYDROGEN PRODUCTION AND DYE REMOVAL</b>                        |                |           |
| <b>Sergio Corte González</b>                                                                                                                             |                |           |

**09:00-09:30**

**ID: 436**

**CTDMI**

**USE OF FIRST PRINCIPLES CALCULATIONS ON THE ACCURATE QUANTIFICATION OF SUPER-PLANCKIAN RADIATIVE HEAT TRANSFER**

**Raul Esquivel-Sirvent**

**09:30-09:45**

**ID: 64**

**CTDMI**

**DFT STUDY OF MOLYBDENUM CARBIDE MXENES FOR POLLUTANTS SENSING**

**Ricardo Bermeo Campos**

**09:45-10:00**

**ID: 328**

**CTDMI**

**FORWARD SENSITIVITY PREDICTION AND INVERSE DESIGN OF SPR SENSORS UTILIZING GENETIC ALGORITHMS AND MACHINE LEARNING**

**Jesús Madrigal-Melchor**

**10:00-10:15**

**ID: 303**

**CTDMI**

**INFLUENCE OF SILVER NANOPARTICLES (AGNPS) ON THE OPTOELECTRONIC RESPONSE OF REDUCED GRAPHENE OXIDE (RGO) CHARACTERIZED BY THZ-TDS AND ITS POTENTIAL APPLICATION IN HIGH-FREQUENCY PHOTOCONDUCTIVE SWITCHES**

**Pablo Córdoba Morales**

**10:15-10:30**

**ID: 439**

**CTDMI**

**FIRST-PRINCIPLES STUDY OF ELECTRONIC AND THERMOELECTRIC PROPERTIES OF ZRPDX (X = SB, SI, SN) HALF-HEUSLER COMPOUNDS**

**Carlos Rufino da Silva**

**COURSE II**

**09:00-10:30**

**Quantitative Spectral Analysis with AAnalyzer**

**Alberto Herrera Gómez**

10:30-10:45

COFFEE BREAK & EXHIBITS

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10:45-11:45

PLENARY SESSION 8

PROFESSOR

José Ordoñez-Miranda

Sorbonne Université, CNRS

EXPERIMENTAL DEVELOPMENT OF THERMAL  
DIODES, TRANSISTORS AND MEMRISTORS

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11:45-12:45

PLENARY SESSION 9

PROFESSOR

Emmanuel Haro Poniatowski

Universidad Autónoma Metropolitana Iztapalapa

SYNTHESIS OF NANOSTRUCTURED GLASSES  
AND GELATINS BY LASER ABLATION

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12:45-15:00

GENERAL ASSEMBLY & CLOSING

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# SCIENCE OUTREACH SYMPOSIUM

MONDAY, SEPTEMBER 21

11:00-12:00

ID: 280

DEL ÁTOMO HASTA LAS NUEVAS TECNOLOGÍAS: PUNTOS CUÁNTICOS, PEQUEÑOS GIGANTES DEL FUTURO.

Leticia Isthmel Espinosa Vega

11:30-12:30

ID: 39

SOLUCIONES RADICALES PARA UN FUTURO CON AGUA LIMPIA: LA QUÍMICA QUE DESTRUYE HASTA LOS CONTAMINANTES MÁS DIFÍCILES

Ana Luisa Martínez García

13:00-14:00

ID: 31

LA CIENCIA DE LOS MATERIALES QUE NOS RODEAN

Guadalupe Izamar Delgado Angeles

16:00-17:00

ID: 306

LA CIENCIA DE MATERIALES FRENTE A LOS DESAFÍOS AMBIENTALES DE LA ACTUALIDAD EN MÉXICO

Jose Pablo Estrella Leyva

TUESDAY, SEPTEMBER 22

09:00-10:00

ID: 403

SE DIJO: HÁGASE LA LUZ... Y LA CIENCIA EXPLICÓ SU ORIGEN

Miguel Melendez-Lira

10:00-11:00

ID: 383

DEL ÁTOMO AL NANOROBOT: AVENTURAS EN EL MUNDO DE LO INFINITAMENTE PEQUEÑO

Víctor Hugo Méndez García

11:00-12:00

ID: 370

LA GRAN REVOLUCIÓN TECNOLÓGICA REQUIERE... ¿NANOCAMBIOS?

Ricardo Bermeo Campos

## WEDNESDAY, SEPTEMBER 23

09:00-10:00

ID: 71

¿QUÉ ONDA CON LA CORROSIÓN! UN ESFUERZO GLOBAL  
PARA EVITAR EL DETERIORO DE MATERIALES

Uriel Jiron Lazos

09:00-10:00

ID: 314

ELECTRÓLISIS PARA UN FUTURO MÁS VERDE

Gabriela Mariela Reyes Chaparro

10:00-11:00

ID: 187

¿QUÉ ONDA CON LA ENERGÍA? EL RETO DE GUARDAR EL  
FUTURO EN UNA BATERÍA

Paulina Judith Camacho Flores

12:00-13:00

ID: 390

ENERGÍA Y MATERIA: EL DESARROLLO DE LOS CHIPS Y LAS  
FUENTES DE LUZ

Wilfrido Calleja Arriaga

15:00-16:00

ID: 294

UN "SÁNDWICH" DE ÓXIDOS PARA FRENAR A LAS  
BACTERIAS, ¿EL ORDEN IMPORTA?

Jorge Guillermo Chacón Reyes

16:00-17:00

ID: 426

MATERIALES MULTIFUNCIONALES EN ENERGÍA Y  
MEDIOAMBIENTE

Issis Claudette Romero Ibarra

## THURSDAY, SEPTEMBER 24

09:00-10:00

ID: 404

NANOMATERIALES QUE IMPULSAN LA TECNOLOGÍA DE LA  
ILUMINACIÓN

Yenny Lucero Casallas-Moreno

10:00-11:00

ID: 385

LA ALTERNATIVA DEL HIDRÓGENO EN ENERGÍA

Mario García Sánchez



## THURSDAY, SEPTEMBER 24

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**16:00-17:00**

**ID: 162**

**SEGUNDA REVOLUCIÓN CUÁNTICA: EL EXTRAÑO MUNDO DE LOS FOTONES**

**Oswaldo de Melo Pereira**

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## FRIDAY, SEPTEMBER 25

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**09:00-10:00**

**ID: 47**

**EDIFICIOS INTELIGENTES: ¿REVOLUCIÓN ENERGÉTICA O ILUSIÓN FRENTE AL CAMBIO CLIMÁTICO?**

**Axel Agustín Ortiz Atondo**

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**10:00-11:00**

**ID: 444**

**ALGO LLAMADO QUÍMICA DEL ESTADO SÓLIDO, ¿SERÁ EL ESLABÓN PERDIDO ENTRE LA CIENCIA Y LA TECNOLOGÍA EN MÉXICO?**

**Zeuz Montiel González**

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**Sociedad Mexicana de  
Ciencia y Tecnología de  
Superficies y Materiales**