LRSM

The Laboratory for Research on the Structure of Matter

May 6, 2022, Palmas del Mar, Humacao, Puerto Rico

Partnership for Research & Education in Materials

UPR PENN PREM

11th Annual Symposium

PREM Impact on Materials Research in Puerto Rico

PROGRAM

AM 9:00 Registration, Coffee, and Refreshments

9:45 **Welcome Messages**
Idalia Ramos, UPR-PENN PREM PI, University of Puerto Rico at Humacao
Jorge Colón, PREM CIE²M PI, University of Puerto Rico at Río Piedras
Ubaldo Córdova, Wisconsin-Puerto Rico PREM PI, University of Puerto Rico at Mayagüez
Eric Stach, LRSM-MRSEC Director and UPR-PENN PREM Co-PI, University of Pennsylvania
Plenary Talks
Moderator: Mark Licurse, Director of Education and Outreach, MRSEC, University of Pennsylvania

10:00 ***Energy Conversion and Storage: Novel Materials and Operando Methods***
Héctor D. Abruña, Department of Chemistry & Chemical Biology and Center for Alkaline Based Energy Solutions (CABES), Cornell University

10:45 ***Particle-stabilized multiphasic mixtures for energy, healthcare and sensing applications***
Daeyeon Lee, Department of Chemical and Biomolecular Engineering, University of Pennsylvania

11:30 ***Building Bioactivity into 'Slippery' Liquid-Infused Porous Surfaces***
David M. Lynn, Department of Chemical and Biological Engineering and Department of Chemistry, University of Wisconsin-Madison

PM 12:15 **Working Lunch**

1:15 **Group Photo**

1:30 ***Perovskites: what's the big deal...and how can I get involved?***
Andrew Rappe, Department of Chemistry, University of Pennsylvania

2:15 ***Orientation Domains in Anisotropic Molecular Glass Thin Films***
Paul M. Voyles, Department of Materials Science and Engineering, University of Wisconsin-Madison

3:00 ***CHESS and PREM CIE²M***
Joel D. Brock, Cornell High Energy Synchrotron Source (CHESS) and Engineering School of Applied & Engineering Physics, Cornell University

4:00 **Poster Session and Reception**

5:30 **Closing**

PREM CIE²M Center for Interfacial Electrochemistry of Energy Materials

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MRSEC Penn

Poster Presentations

P-01 "Tin Oxide sensors for monitoring environmentally harmful gasses", Adrián Camacho-Berríos[1*], Arianaliz Torres-Cruz[2], Bianca Pérez-Vicente[2], Wilfredo Otaño[2], 1-UPR Mayagüez, 2-UPR Cayey. *adrian.camacho@upr.edu

P-02 "Nickel, Cobalt, and Copper/Vulcan XC-72R via the Rotating Disk Slurry Electrodeposition (RoDSE) method modified with Platinum for the Oxygen Reduction and Oxygen Evolution Reaction (ORR & OER) in alkaline medium", Pedro R. Trinidad-Pérez[1*], Joesene J. Soto-Pérez[1], Gerardo J. Quintana[1], Carlos R. Cabrera[12], 1-Dept. of Chemistry, UPR, Río Piedras, 2-Dept. of Chemistry and Biochemistry, The University of Texas at El Paso. *pedro.trinidad1@upr.edu

P-03 "UV Photoresponse of Reduced Graphene Oxide Devices", J.L. Pérez Gordillo[1*], A. Meléndez[1], J.J. Santiago-Avilés[2], N.J. Pinto[1], I. Ramos[1], 1-UPR Humacao, 2-PENN. *jose.perez120@upr.edu

P-04 "Viability of Tamarind Seeds as a Source of Activated Carbon for Use in Hybrid Supercapacitors", Shawn Zografos[*], Rosemary Cortés, Daniel Fontánez, Ratnakar Palai, UPR Río Piedras, *shawn.zografos@upr.edu

P-05 "Ultraviolet light tunable single walled carbon nanotubes/n-Si junction diode", Alejandro J. Cruz-Arzón[1*], Kelotchi S. Figueroa[1], Nicholas J. Pinto[1], Zhang Qicheng[2], Christopher Kehayias[2], Suh Yeonjoon[3], Charlie Johnson[2], 1-Dept. Physics and Electronics, UPR Humacao, 2-Dept. Physics and Astronomy, PENN, 3-Dept. Electrical and Systems Eng., PENN. *alejandro.cruz6@upr.edu

P-06 "Sensing ferrocene derivatives using a modified glassy carbon electrode with a Pedot/Carbon Microspheres Thin Film", N. Vergara del Toro[1*], R. Oyola[1], M. Rivera-Claudio[1], J. Castillo[1], A. Meléndez[2], I. Ramos[2], 1-Dept. Chemistry, UPR-Humacao, 2-Dept. Physics and Electronics, UPR Humacao. *nathaly.vergara@upr.edu

P-07 "Carbon nanotubes network ferroelectric field effect: Effect of gate voltage scan rate on device performance", Karina K. Reyes Olmeda[1*], Kelotchi S. Figueroa[1], Nicholas J. Pinto[1], Zhang Qicheng[2], Christopher Kehayias[2], Suh Yeonjoon[2], A.T. Charlie Johnson[2], 1-UPR Humacao, 2-PENN. *karina.reyes4@upr.edu

P-08 "Spin configurations in the perovskite heterostructure $LaCoO_3/SrFeO_3$", David A. González[*], Juan A. Santana, UPR-Cayey. *david.gonzalez28@upr.edu

P-09 "Temperature dependent charge transport in ferroelectrically gated graphene far from the Dirac point", Kelotchi S. Figueroa[1], Natalya A. Zimbovskaya[1], Nicholas J. Pinto[1*], Chengyu Wen[2], A.T. Charlie Johnson[2], [1]UPR Humacao, [2]PENN. *nicholas.pinto@upr.edu

P-10 "Solvent-mediated Polymorphic Transformations in Molten Polymers: The Account of Acetaminophen", José R. Hernández Espinell[1,2], Verónica Toro[1,2], Xin Yao[3], Lian Yu[3], Vilmalí López-Mejías[1,2], Torsten Stelzer[2,4*], 1-UPR Río Piedras, 2-Crystallization Design Institute, 3-U. Wisconsin-Madison, 4-UPR Medical Sciences. *torsten.stelzer@upr.edu

P-11 "Study of the Oxygen Reduction Reaction using Onion-like Carbon, Nitrogen-based Conductive Polymers and Metal Alloys", Kelvin J. Vicente Ramos[*], Brenda L. Vargas, Hiram J. López Astacio, Lisandro Cunci, UAGM Gurabo. *kvicente4@email.uagm.edu

P-12 "Fabrication of Self-Standing Carbon Sphere Films by Le-CaRI", Enrique O. González[1*], A. Meléndez[1], I. Ramos[1], D. Lee[2]. 1-UPR-Humacao, 2-PENN. *enrique.gonzalez7@upr.edu

P-13 "Bimetallic Be-Cu Porous Coordination Polymer for CO_2 Removal via Adsorption", Alberto Tous-Granados, Arturo J. Hernández-Maldonado[*], UPR Mayagüez. *arturoj.hernandez@upr.edu

P-14 "Polymorphism and Solubility Studies in Early Drug Development: The Account of MBQ-167", Jocelyn M. Jiménez Cruz[1,2], Cornelis P. Vlaar[1], Torsten Stelzer[1,2*], Vilmalí López-Mejías[2**], 1-

UPR-Medical Sciences, 2-Crystallization Design Institute, Molecular Sciences Research Center UPR, *torsten.stelzer@upr.edu. **vilmali.lopez@upr.edu

P-15 "A scheme aimed at improving the sampling of conformations of patterned polymer brushes: preliminary results", J. Sotero Esteva[1*], M. Rivera Lazú[1], A. Castro Santiago[1], P. Moore[2], 1-Dept. Mathematics, UPR Humacao; 2-Dept. Chemistry, U. Sciences, Philadelphia. *jose.sotero@upr.edu

P-16 "Polymorphic Phase Transformations in Crystalline Solid Dispersions: The Combined Effect of Pressure and Temperature", Francheska Reyes Figueroa, José Hernández Espinell, Marileyda Hernández Hernández, Vilmalí López-Mejías, Torsten Stelzer*, UPR Medical Sciences. *torsten.stelzer@upr.edu

P-17 "An adversarial network for training a generator of nodes of self avoiding walks attached to a surface", Michael J. Rivera Lazú*, Adalis Castro Santiago, José Sotero Esteva, UPR Humacao. *michael.rivera40@upr.edu

P-18 "Self-assembly and Break of Magnetic Janus Colloids with self-propulsion", Jonathan Victoria-Camacho[1*], Ilona Kretzschmar[2], Ubaldo Córdova-Figueroa[1]. 1-UPR Mayagüez, 2-The City College of New York. *jonathan.victoria@upr.edu

P-19 "Cellulose Acetate Based Enzymatic Assay Template", Renis J. Agosto Nieves[1*], Gabriela B. Gómez - Dopazo[1], Vibha Bansal[1], Idalia Ramos[2], José Sotero[2], Daniel Rivera[2], Ezio Fasoli[2], Ivan Dmochowski[3], 1-UPR Cayey, 2-UPR Humacao, 3-PENN, *renis.agosto@upr.edu

P-20 "Enhancing the preparation of single-walled carbon nanotube and conductive polymers gels", Paola N. Del Pozo[1,2*], Angelo Porcu[3], Anamaris Meléndez[2], Idalia Ramos[2], Arjun Yodh[4], Mohammad Islam[5]. 1-José Collazo HS, Juncos, PR, 2-UPR-Humacao, 3-UPR Mayagüez, 4-PENN, 5-Carnegie Mellon U. *paola.delpozo1@upr.edu

P-21 "Effect of Surfactant Structure on the Interfacial Tension of a Nematic Liquid Crystal", Mariela R. Rodríguez-Otero*, Oscar H. Piñeres-Quiñones, Claribel Acevedo-Vélez, UPR Mayagüez. *mariela.rodriguez7@upr.edu

P-22 "Liquid Marbles as Bioreactors for Enzymatic Activity Determination", Guillermo A Correa Otero[1*], Rolando L. Albarracín Rivera[1], Renis J. Agosto Nieves[1], Gabriela B. Gómez-Dopazo[1], Daeyeon Lee[2], Vibha Bansal[1], 1-UPR Cayey, 2-PENN. *guillermo.correa1@upr.edu

P-23 "Liquid crystal emulsions stabilized by nanoparticle-surfactant complexes", Oscar H. Pineres-Quiñones[1], David M. Lynn[2] Claribel Acevedo-Vélez[1*], 1-UPR Mayagüez, 2-U. Wisconsin-Madison. *claribel.acevedo@upr.edu

P-24 "Online Lab for High School Students: Calibration Curve Using Fluorescence of a Yellow Highlighter Solution", Nitza V. Falcón-Cruz[1], Nathaly Vergara-Toro[1], Alondra Brito-Pérez[2], Daniel Rivera[3], Anamaris Meléndez[3], Idalia Ramos[3], Rolando Oyola[1*]. 1-Dept. of Chemistry, UPR-Humacao, 2-Dept. of Biology, UPR-Humacao, 3-Dept. of Physics and Electronics, UPR-Humacao. *rolando.oyola@upr.edu

P-25 "Enhancement of Liquid Crystal Emulsion Stability by Nanoparticle Inclusion in the Interface Under Static & Dynamic Conditions", Shaskya Y. Castaño-Castellar[1*], Oscar H. Piñeres-Quiñones[1], David M. Lynn[2], Claribel Acevedo-Vélez[1], Aldo Acevedo[1]. 1-Dept. of Chemical Engineering, UPR-Mayagüez, 2-Dept. of Chemical and Biological Engineering, U. Wisconsin-Madison. *shaskya.castano@upr.edu

P-26 "Fluorescence Spectroscopy Study of the Interaction of Human Serum Albumin with beta-Cyclodextrin Modified Gallium Nanoparticles", Nitza V. Falcón-Cruz[1], Anamaris Meléndez[2], Idalia Ramos[2], Rolando Oyola[1*]. 1-Department of Chemistry, UPR Humacao, 2-Department of Physics & Electronics, UPR Humacao. *rolando.oyola@upr.edu

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P-27 "Polymorphic Control in Titanium Dioxide Nanoparticles", Gabriel Quiñones Vélez*, Diego Soto Nieves, Anushka Castro Vazquez, Vilmali Lopez-Mejias, UPR-Río Piedras. *gabriel.quinones7@upr.edu

P-28 "Physical Vapor Deposition of Ag Nanoparticles for Trace Analyte Photonic Detection", Edgar Díaz[1], Carla Molinez[1], Gabriel García[1], Camila Negrón[2], Lorena Reyes[2], Adrian Camacho[1], Wilfredo Otaño[1], Francisco Bezares[2], 1-UPR Cayey, 2-UPR Mayagüez. *francisco.bezares1@upr.edu

P-29 "Manganite-based Oxide Materials for Dye-sensitized Solar Cells", Roberto A. Santos Torres*, Jalianet Román, Joselyn del Pilar, UPR Mayagüez. *roberto.santos4@upr.edu

P-30 "Cyclodextrin-Modified Gallium Nanoparticles (GaCDNP) assessment for amoxicillin delivery", Nicole De Jesús, Alondra Feliciano, Rolando Oyola*, UPR-Humacao. *rolando.oyola@upr.edu

P-31 "Earth-abundant electrocatalyst for the OER within zirconium phosphate nanoparticles", Kálery La Luz-Rivera[1*], Mario V. Ramos-Garcés[2], Andrea R. Cortés[1], Victoria M. Figueroa[1], Jorge L. Colón[1], 1-UPR Río Piedras, 2-Penn State U. *kalery.la@upr.edu

P-32 "Production of lactic acid from fructose in polar aprotic solvents using Sn-Beta as catalyst", Isabel Hortal-Sánchez, Nelson Cardona-Martínez, UPR Mayagüez. *isabel.hortal@upr.edu

P-33 "Synthesis of Iron/Cobalt Nitrogen Doped Onion-Like Carbon Catalyst for Oxygen Reduction Reaction", Hiram J. López-Astacio[1*], Kelvin J. Vicente Ramos[2], Brenda L. Pérez Vargas[3], Lisandro F. Cunci[1]. 1-AGMU, 2-UPR, Río Piedras. *brenda.vargas@upr.edu

P-34 "Effect of the post synthesis method on the catalytic activity of Lewis acidic Sn-Beta zeolite catalysts for the conversion of fructose into a-hydroxy acids", A. Montaño-Herazo*, I. Hortal-Sánchez, E. Lebrón-Rodríguez, A. Al-Abdulghani, I. Herman, Nelson Cardona-Martínez, UPR Mayagüez. *angela.montano@upr.edu

P-35 "Synthesis of Doped Onion-like Carbon Nanoparticles as a Support for Non-precious Metal Electrocatalyst", Angélica Del Valle-Pérez*, Joyce De Jesús, Lisandro Cunci, AGMU Gurabo. *adel157@email.uagm.edu

P-36 "CO_2 Hydrogenation to Methanol over Cu/Ga/Zr Catalysts", Edgar Turizo-Pinilla, Theodore Agbi, Shao-Chun Wang, Abdullah Al Abdulghani, Lesli Mark, Ive Hermans, Yomaira Pagán-Torres, UPR-Mayagüez, U. of Wisconsin-Madison. *edgar.turizo@upr.edu

P-37 "Exploring Spin Configurations in Model SrFeO3/LaMnO3 Heterostructures", Alejandra Rosario*, Juan A. Santana, UPR Cayey. *alejandra.rosario3@upr.edu

Conference Location
Wyndham Palmas Beach & Golf Resort
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