



## PREM Annual Meeting

Friday November 15, 2024

ADEM Building, University of Puerto Rico at Humacao,  
Aguiar Aramburu Ave Rd. 908 Km 1.2, Humacao, PR, 00791

### Student Poster Presentations

- P-1** *Development of Autonomous System for Deposition of Polymer Composite Structures, Myrialisses Ortiz<sup>1</sup>, Kimberly Hernández<sup>2</sup>, Daviannie Rivera<sup>3</sup>, Yvonne Zagzag<sup>4</sup>, Pavel Shapturenka<sup>5</sup>, Chinedum Osuji<sup>5</sup>, Idalia Ramos<sup>1</sup>, José Sotero<sup>6</sup>, <sup>1</sup>Dept. Physics, UPRH; <sup>2</sup>Dept. Chemistry, UPRH; <sup>3</sup>PMBHS; <sup>4</sup>Dept. Physics and Astronomy, PENN; <sup>5</sup>Dept. Chem. Biomol. Eng., PENN; <sup>6</sup>Dept. Mathematics, UPRH*
- P-2** *Enhancing Diode-based Device Performance through Autonomous Deposition of Polymer Structure and Machine Learning, Kimberly M. Hernández Ferrer<sup>1</sup>, Robert Rosario<sup>2</sup>, Daviannie Rivera Márquez<sup>3</sup>, Myrialisses Ortiz Rodríguez<sup>4</sup>, José O. Sotero Esteva, <sup>1</sup>Dept. of Chemistry, UPRH; <sup>2</sup>Dept. Mathematics, UPRH; <sup>3</sup>PMBHS; <sup>4</sup>Dept. Physics, UPRH*
- P-3** *Improving Size Distribution of Carbon Spheres for Preparation of Polymer Composites, Emily Morales<sup>1</sup>, Robert Rosario<sup>2</sup>, Anamaris Meléndez<sup>1</sup>, José Sotero<sup>2</sup>, Idalia Ramos<sup>1</sup>; <sup>1</sup>Dept. Physics, UPRH; <sup>2</sup>Dept. Mathematics, UPRH*
- P-4** *Progress on the Autonomous Optimization of 3D-Printed Microfluidic Devices for Separation of Carbon Spheres, Robert Rosario<sup>1</sup>, Kimberly Hernández<sup>2</sup>, Emily Morales<sup>3</sup>, José Sotero<sup>1</sup>, <sup>1</sup>Dept. Mathematics; <sup>2</sup>Dept. Chemistry, UPRH; <sup>3</sup>Dept. Physics, UPRH*
- P-5** *Visualizing Pinch Flow Fractionation using Python and LAMMPS Simulations, Adrián R. Roldán Richards<sup>1</sup>, Sophia L. Martínez Miranda<sup>2</sup>, José O. Sotero<sup>3</sup>, <sup>1</sup>Dept. Mathematics, UPRH; <sup>2</sup>PMB*
- P-6** *Characterization and Enhancement of rGO/Polymer Composite Membranes, Analaura Díaz<sup>1</sup>, Raychan Galarza<sup>2</sup>, Anamaris Meléndez<sup>1</sup>, Idalia Ramos<sup>1</sup>, <sup>1</sup>Dept. Physics, UPRH; <sup>2</sup>EEBA*
- P-7** *Electrical Characterization of the Junction formed by rGO and PEDOT Thin Films With Ionic Liquid Gating at Room Temperature, Keiralys Soto Ortiz, Anamaris Meléndez, Idalia Ramos, Nicholas J. Pinto, Dept. Physics, UPRH*
- P-8** *Recycling and Reusing Cellulose Acetate Microwell Plates, Gustavo A. Berríos Alvarado<sup>1</sup>, Milliennys S Vázquez Saez<sup>1</sup>, Lyanivette Alvarado López<sup>1</sup>, Ivan J. Dmoschowski<sup>2</sup>, Daeyeon Lee<sup>3</sup>, Vibha Bansal<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRC, <sup>2</sup>Dept. Chemistry, PENN; <sup>3</sup>Dept. Chem. Biomol. Eng., PENN*
- P-9** *Fabricating Floating Liquid Marbles for Sensing Applications, Luis A Delgado Rodríguez<sup>1</sup>, Nathalia Liu Derestrepo<sup>1</sup>, Ivan J Dmoschowski<sup>2</sup>, Daeyeon Lee<sup>3</sup>, Vibha Bansal<sup>1</sup>, <sup>1</sup>Dept. of Chemistry, UPRC; <sup>2</sup>Dept. of Chemistry, PENN; <sup>3</sup>Dept. Chem. Biomol. Engin., PENN*
- P-10** *Effect of Expansion on Surface Coating of Liquid Marbles, Nathalia Liu De Restrepo<sup>1</sup>, Philip Iaccarino<sup>2</sup>, Luis A. Delgado Rodríguez<sup>1</sup>, Daeyeon Lee<sup>2</sup>, Vibha Bansal<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRC; <sup>2</sup>Dept. Chem. Biomol. Engin., PENN*
- P-11** *Fabricating sensors and diodes using PEDOT nanoribbons and thin films, Nerismar Román Santiago<sup>1</sup>, Anamaris Melendez<sup>2</sup>, Idalia Ramos<sup>2</sup>, Nicholas J. Pinto<sup>2</sup>, <sup>1</sup>JJMP; <sup>2</sup>Dept. Physics, UPRH*
- P-12** *Electrical Characterization of a p-n junction fabricated by crossing an Electro-spun PEDOT nanoribbon and MoS<sub>2</sub>, Carlos Torres Romero<sup>1</sup>, Nicholas J. Pinto<sup>1</sup>, Yeonjoon Suh<sup>3</sup>, Nikita Gupta<sup>2</sup>, A.T. Charlie Johnson<sup>2</sup>, <sup>1</sup>Dept. Physics, UPRH, <sup>2</sup>Dept. Physics and Astronomy, PENN <sup>3</sup>Dept. Elect. Systems Engin., PENN*



- P-13** *Temperature dependent electrical characterization of monolayer MoSe<sub>2</sub> with ionic liquid gating*, Alexander Real-Quiñones<sup>1</sup>, Nicholas J. **Pinto**<sup>1</sup>, Yeonjoon Suh<sup>3</sup>, Nikita Gupta<sup>2</sup> and A.T. Charlie **Johnson**<sup>2</sup>, <sup>1</sup>Dept. Physics, UPRH; <sup>2</sup>Dept. Physics and Astronomy, PENN, <sup>3</sup>Dept. Elect. Systems Engin., PENN
- P-14** *Amoxicillin sensing using Graphene/Gallium-CD Nanoparticles FET*, Jeilian Serrano-Ortíz<sup>1</sup>, Amanda S. Ayala-Cuadrado<sup>2</sup>, Nicholas J. **Pinto**<sup>3</sup>, Rolando **Oyola**<sup>3</sup>, <sup>1</sup>RQM; <sup>2</sup>Dept. Chemistry, UPRH; <sup>3</sup>Dept. Physics, UPRH
- P-15** *Graphene/Gallium-betaCD Nanoparticles based FET as warfarin sensor*, Amanda S. Ayala-Cuadrado<sup>1</sup>, Nicholas J. **Pinto**<sup>2</sup>, Rolando **Oyola**<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRH; <sup>2</sup>Dept. Physics, UPRH
- P-16** *Graphene/Gallium Nanoparticle-Based FET Sensor for antipsychotic drug detection*, Kamillie A. Díaz Dávila<sup>1</sup>, Nicholas J. **Pinto**<sup>2</sup>, Rolando **Oyola**<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRH; <sup>2</sup>Dept. Physics, UPRH
- P-17** *Morphological and Optical Properties of Sn nanoparticles Fabricated by Magnetron Sputtering Physical Vapor Deposition*, Wanda Y. Rivera Zayas<sup>1</sup>, Joshua Chaparro Mata<sup>2</sup>, Erika Ortega<sup>2</sup>, Eric **Stach**<sup>2</sup>, Wilfredo Otaño<sup>1</sup>, Francisco **Bezares**<sup>3</sup>, <sup>1</sup>Dept. Biology, UPRC; <sup>2</sup>Dept. Physics, UPRM; <sup>3</sup>LRSM, PENN
- P-18** *Origin of the Ferromagnetic Properties of HSrCoO<sub>2.5</sub> through Density Functional Theory Calculations*, Andrea I. Garcia Ramos<sup>1</sup>, Andrew M. **Rappe**<sup>2</sup>, Hyeon Han<sup>2</sup>, Juan **Santana**<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRH; <sup>2</sup>Dept. Chemistry, PENN
- P-19** *Effect of Doping on the Separation of Oxygen Vacancy Phases in Brownmillerites*, Yalexander Sánchez, Juan **Santana**, Dept. Chemistry, UPRC
- P-20** *Enhancing aeronautical computing performance through multiferroic materials for advanced neuromorphic systems*, María Rodríguez<sup>1</sup>, Natalia Rios<sup>1</sup>, Arnaldo Ortiz<sup>1</sup>, Danilo **Barrionuevo**<sup>2</sup>, <sup>1</sup>Dept. Biology, UPRC, <sup>2</sup>Dept. Mathematics and Physics, UPRC
- P-21** *Thin-film batteries for enhanced performance in medical device applications*, Patricia Gierbolini-Santos<sup>1</sup>, Amanda López-Ramírez<sup>1</sup>, Danilo **Barrionuevo**<sup>2</sup>, <sup>1</sup>Dept. Biology, UPRC; <sup>2</sup>Dept. Mathematics and Physics, UPRC
- P-22** *Synthesis of Pillararene for the Development of Cellulose Based Potable Water Filters*, Alanys Lopez<sup>1</sup>, Camila Galean<sup>1</sup>, Nadesha Laboy<sup>1</sup>, Auriani Gómez<sup>1</sup>, Kamila García<sup>1</sup>, Ivan **Dmochowski**<sup>2</sup>, Ezio **Fasoli**<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRH; Dept. Chemistry PENN
- P-23** *Cellulose Sensor for Aromatic Aldehyde Detection and Quantitative Analysis*, Nadesha Laboy<sup>1</sup>, Emmanuel Rosa<sup>2</sup>, Yelisbeth Santa<sup>1</sup>, Auriani Gómez<sup>1</sup>, José **Sotero**<sup>2</sup>, Ezio **Fasoli**<sup>1</sup>, <sup>1</sup>Dept. Chemistry, UPRH; <sup>2</sup>Dept. Mathematics, UPRH
- P-24** *Synthesis of Cubosome Nanoparticles for Drug Delivery*, Airam Rivera<sup>1</sup>, Eduardo Sanchez<sup>1</sup>, Daeyon **Lee**<sup>2</sup>, José O. **Sotero**<sup>3</sup>, Rolando **Oyola**, <sup>1</sup>Dept. Chemistry, UPRH; <sup>2</sup>Dept. Chem. Biomol. Eng., PENN; <sup>3</sup>Dept. Mathematics, UPRH
- P-25** *Cytotoxicity of gallium nanoparticles using MTT assay*, Aleishanahir Marín-Ortíz<sup>1</sup>, Jael Maldonado-Torres<sup>1</sup>, Kevin Alicea<sup>1</sup>, Rolando **Oyola**<sup>2</sup>, <sup>1</sup>Dept. Biology, UPRH; <sup>1</sup>Dept. Chemistry, UPRH
- P-26** *In-vitro studies of the Ab(40) oligomerization in the presence of GaO-OH and GaO-βCD Nanoparticles*, Carmen I. Torres-Dávila, Rolando **Oyola**, Dept. Chemistry, UPR