LRSM

The Laboratory for Research on the Structure of Matter

Friday May 16, 2025, Hyatt Place, Distrito de Convenciones, San Juan, Puerto Rico

Partnership for Research & Education in Materials

PREM UPR PENN

13th Annual Symposium

Self-Driving Science: Artificial Intelligence & Autonomous Experimentation

PROGRAM

Hyatt Place, Meeting Rooms 1-3

9:00 AM Registration and Breakfast

10:00 AM Welcome Messages & Introduction
Eric Stach, University of Pennsylvania
Idalia Ramos, University of Puerto Rico at Humacao

10:15 AM *Physics-Based Autonomous Learning Metamaterials*
Lauren Altman, Department of Physics, University of Pennsylvania

11:00 AM Coffee Break

11:15 AM *Using Simulations and AI to Make the Next Generation of Membranes*
Sam Layding, Department of Chemical and Biomolecular Engineering
University of Pennsylvania

12:00 PM Working Lunch

1:15 PM Group Photo

1:30 PM *Listening to Deep Learning Models Talk About Data*
Keiran Murphy, Department of Bioengineering; Physics
University of Pennsylvania

2:15 PM *Bridging Soft Materials Science and Training Opportunities through Soft-AE*
Pavel Shapturenka, Department of Chemical and Biomolecular Engineering
University of Pennsylvania

3:00 PM *Machine Learning as an Experimental Guide*
Sam Dillavou, Department of Physics
University of Pennsylvania

3:45 PM Break

4:00 PM Poster Session and Reception

5:30 PM Closing

For more information, visit:
https://prem.uprh.edu/symposium/

POSTER PRESENTATION

P-01 "$MoSe_2$ ionic liquid tunable diode", Keiralys Soto-Ortiz[1], Alexander Real-Quiñones[1], Nicholas Pinto[1], C. Wen[2], Y. Suh[2], A.T. Charlie Johnson[2], UPR-Humacao, PENN

P-02 "Ionic Liquid Gagted poly[benzimidazobenzophenanthroline]-BBL thin film field effect transistor", Alejandro J. Cruz and Nicholas Pinto, UPR-Humacao

P-03 "Optical properties of Aluminum-Copper Nanoparticles", Cristian L Gutiérrez Cuéllar, Jheison Lizcano Muñoz, Joshua Chaparro Mata, María Villarreal Blanco, Samuel Hernández, Francisco J. Bezares, UPR-Mayagüez

P-04 "Computational identification of the magnetic structure of $HSrCoO_{2.5}$", Andrea I. García-Ramos, Juan A. Santana, UPR-Cayey

P-05 "Transparent Microwell Plates from Cellulose Acetate Biopolymer", Nathalia Liu De Restrepo[1], Alexander Y. Ortiz Rivera[1], Gabriela Gómez Dopaso[1,2], Vibha Bansal[1], [1]UPR-Cayey, [2]PENN

P-06 "Developing Potable Water Purification Filters by Linking Pillararenes to Cellulose", Yelisbeth Santa Villafañe[1], Grace M. Sánchez Santiago[1], Jubetzy L. Crespo Pintado[1], Auriani F. Gómez Cintrón[1], Kamyla M. García Roque[1], Ivan J. Dmochowski[2], Ezio Fasoli[1], [1]UPR-Humacao, [2]PENN

P-07 "Computational Study on the Stability of Sr_2CoFeO_5 Under Tensile and Compressive Strain", Yalexander Sánchez-Navarro, Juan A. Santana, UPR-Cayey

P-08 "Optimization of Recycling Process for Cellulose Acetate Microwell Plates", Lyanivette Alvarado López[1], Gustavo A. Berríos Alvarado[1], Millienys Vázquez Sáez[1], Gabriela Gómez Dopazo[1,2], Daeyeon Lee[2], Ivan J. Dmochowski[2], Vibha Bansal[1], [1]UPR-Cayey, [2]PENN

P-09 "Liquid Marbles Fabrication and Characterization for Injectability and Transferability", Luis A. Delgado Rodríguez[1], Lyanivette Alvarado López[1], Renis J. Agosto[1,3], Gabriela Gómez Dopazo[1,3], Ezio Fasoli[2], Ivan J. Dmochowski[3], Daeyeon Lee[3], Vibha Bansal[1], [1]UPR-Cayey, [2]UPR-Humacao, [3]PENN

P-10 "NSF-PREM Outreach Program: Inspiring future researchers in materials science", Amanda S. Ayala Cuadrado, Aleishanahir Marin Ortíz, Carmen I. Torres Dávila, Eduardo L. Sánchez Santos, Airam J. Rivera Torres, Rolando Oyola, UPR-Humacao

P-11 "Analytical Approach to Packing Density of Atto655 Over Gold Nanoparticles", Carmen I.Torres Dávila[1], Kamillie Díaz Dávila[2], Nitza Falcón Cruz[1], Rolando Oyola[1], UPR-Humacao, Bellas Artes HS, Humacao

P-12 "Single-phase multiferroic materials for neuromorphic computing application", Danilo Barrionuevo, Carla Báez, Xavier Zayas, Eric Sánchez, Edward Hickey, María Rodríguez, Natalia Ríos, Yasmarie Colón, Paola García, Arnaldo Ortiz, Patricia Gierbolini, Cynthia Rodríguez, Kyanelisse Flores, UPR-Cayey

P-13 "ORR activity comparison between ZnO and $M_xZn_{1-x}O$ catalysts for fuel cell applications", Carlos A. Quiñones-Martínez[1], Ninoshca M. García-Rodríguez[1], Héctor J. González-Vélez[1], Héctor D. Abruña[2], Mitk'El B. Santiago[1], [1]UPR-Humacao, [2]Cornell

P-14 "Boosting Redox Kinetics of Polysulfides Via Synergistic Polarization of Ferroelectric ($Ba_{0.9}Sr_{0.1}TiO_3$) Nanoparticles for High-Capacity Li-S Batteries", Ivan Castillo[1,2,3], D. Barrionuevo[2], A. Ortiz[2], G. Morel[1], R.S. Katiyar[1], [1]UPR-Río Piedras, [2]UPR-Cayey, [3]UAGM-San Juan

P-15 "Characterization of Carbon Spheres Synthesized through Hydrothermal Carbonization Sucrose", Emily T. Morales[1], Myrialisses Ortiz[1], Robert A. Rosario[1], Emmanuel Rosa[1], Anamaris Meléndez[1], César A. Nieves[2], José O. Sotero[1], Idalia Ramos[1], [1]UPR-Humacao, [2]Omya Techn. Center Cincinnati, OH

P-16 "3D-printed fluidic devices for separation of carbon spheres", Robert A. Rosario-González[1], Myrialisses Ortiz[1], Kimberly M. Hernández[2], Rolando Oyola[1], Idalia Ramos[1], José O. Sotero[1], [1]UPR-Humacao, [2]Ramón Quiñones Medina, Yabucoa

P-17 "Deformed plate wells detection using neural networks and knowledge transfer", Emmanuel Rosa-Delgado[1], Michael J. Rivera-Lazú[1], Vibha Bansal[2], José O. Sotero Esteva[1], [1]UPR-Humacao, [2]UPR-Cayey

P-18 "Detection of Aromatic Aldehydes via Paper-Based Sensor and its Implementation in the Experimenta con PREM Workshop", Auriani F. Gómez Cintrón, Yelisbeth Santa, Gabriela Villafañe, Ezio Fasoli, UPR-Humacao

P-19 "Photoresponse properties of a broadband rGO-nSi photodetector", José L. Pérez-Gordillo[1], Anamaris Meléndez[1], Jorge J. Santiago Avilés[2], Nicholas J. Pinto[1], Idalia Ramos[1], [1]UPR-Humacao, [2]PENN

P-20 "Controlling the optical properties of Ag nanoparticles by pressure variation during physical vapor deposition", Wanda R. Rivera Zayas[1], Camila A. Negrón Vélez[2], Edgar Díaz[1], Erika Ortega[3], Deep Jariwalla[3], Eric Stach[3], Francisco Bezares[2], [1]UPR-Cayey, [2]UPR-Mayagüez, [3]PENN

NSF-DMR-2309403
NSF-DMR-2122102
NSF-DMR-2152205