Department of Chemistry Newsletter
Pittsburg State University
May 2017

Message from the Chair

Dear Reader(s),
Welcome (back) to the Pittsburg State University Chemistry Department's Newsletter. It's been a really long time since our last edition and much has happened in and around our Department since then. The good news, however, is that almost all of what has happened was good, and we seriously intend to keep it that way into the future.

Recently, our university adopted a new 5-year strategic plan entitled "Pathway to Prominence". It is an ambitious undertaking and it aims at bringing PSU up to achieving and retaining not only regional and statewide, but also national recognition and significance. Toward this end, our Department has already provided an important contribution and played a very significant role.
For example, since our last Newsletter, we have:

- Increased the number of full time faculty to ten, and part-time and associated faculty to three;
- Expanded our program base from two (B.S. and M.S. programs in Chemistry) to six, by adding B.S. and M.S. programs in Polymer Chemistry as well as accelerated M.S. programs in both Chemistry and Polymer Chemistry;
- Increased the numbers of graduate students from (on average) 8-10 in the past, to over 30 in the last four years;
- Brought in very significant amounts of research funding from a variety of granting agencies and industrial partners;
- Expanded our equipment base; and
- Achieved many other things outlined in what follows below.

We hope that, after reading this Newsletter, you will agree that these are all excellent developments of a fast growing modern Chemistry Department that we are, and that we are successfully creating a firm foundation for further growth to prominence that we intend to achieve. So, again: welcome back, and keep checking our future newsletters for an exciting ride that we believe the future will bring and that we would love to take you on with us. Needless to add: we would also love to hear from you: our alumni! Please get in touch and let us know what is happening in your lives and your carriers. We would love to publish news about you in this Newsletter. Our Department was, is, and always will be your home so please stay with us. As we often say, and really mean it: Once a (Chemist) Gorilla always a (Chemist) Gorilla!

Departmental News

Distinguished Polymer Lecturer Series
Dr. Richard Crooks from The University of Texas at Austin presented on “Development of Electrocatalytic Models for Testing Theory” on May 5, 2017

Distinguished Polymer Lecturer Series
Professor Richard M. Laine from the University of Michigan in Ann Arbor, Michigan presented on "F - Catalytic Rearrangements of Silsesequioxanes (SQS) and Analogs: New Cage Sizes and Unusual Reactive Properties" on October 21, 2016.

Careers in Chemistry Lecture Series
Heather Knechtges from Ford Motor Co. was the first presenter for this series, discussing “ESD Control in Cars: on April 5, 2017.

Congratulations to Dr. Khamis Siam for his promotion to University Professor.

Congratulations to Dr. Jody Neef for his promotion to Associate Professor

Faculty and Staff

Petar R. Dvornic, Chair: Synthetic Polymer Chemist
Ram Gupta, Assistant Professor: Polymer Chemist
James McAfee, Professor: Biochemist
Charles (Jody) Neef, Associate Professor: Organic Chemist
Dilip K. Paul, University Professor: Analytical Chemist
Santimukul Santra, Assistant Professor: Polymer Chemist
William M. Shirley, Professor: Physical Chemist

Khamis Siam, University Professor: Computational Chemist

Irene Zegar, Associate Professor: Physical Biochemist

Maha Shresta, Adjunct Instructor

Tuhina Banerjee, Chemist I and Adjunct Instructor

Jeanne Norton, Assistant Professor of Engineering Technology: Polymer Chemist

Linda Hoesli, Administrative Specialist

Graduating Students

MS in Chemistry - Johara Al Dream, Nada Aljehanu, Samiyah Aloqayli, Abdulrahman Alhathir

MS in Polymer Chemistry - Austin Bailey, Charith A. Gamaralalage, James Beach, Shuguftha Naz, John Candler, Kyle Schwenker, Zhuo Wang

MS in Education, Chemistry - Greg Howard

BS in Chemistry - Laci Hadorn, Evan Noel**,** Hana Hays, Kylie Proctor**,** Jessica Jewell, Zachary Shaw**,** Ashley Jimenez, Kandi Voorhees**,** Kristopher Keyes, Dagen Worthington, Dylan Lower, Jacob Wylie, Rosa Mendez

BS in Chemistry, Pharmaceutical - Lina Coulter, McKayla Edwards, Lauren Davied, Carly Newberry

BS in Polymer Chemistry - Ren Bean

Awards

Excellence in Thermoset Polymer Research Award from the Thermoset Resin Formulators Association- Mr. Charith Ranaweera

Capital Graduate Research Summit Champion Award- Mr. Sanket Bhoyate

Undergraduate New Investigator Award from American Chemical Society's Petroleum Research Fund- Dr. Santmukul Santra

Graduate School Awards

2017 Distinguished Thesis: Charith Ranaweera

Undergraduate Poster- 1st Place: Evan Noel; 4th Place: Laci Hadorn

Graduate Oral- 1st Place: Austin Bailey

Outstanding Faculty Scholarship Award- Dr. Santimukul Santra

Departmental Graduate Student Awards

Chemistry Graduate Teaching Award– Momin Ansare, Austin Bailey

Chemistry Graduate Scholarship Award– Nada Aljehanu, May AlTammar

Chemistry Graduate Research Award– Johara Al Dream, Samiyah Aloqayli

Chemistry Graduate Service Award – Elaf AlAttas, Dalal AlQahtani

Polymer Graduate Teaching Award- James Beach, John Candler

Polymer Graduate Scholarship Award- Tanuja Tummala, Sanket Bhoyate

Polymer Graduate Research Award- Kyle Schwenker, Shuguftha Naz

Polymer Graduate Service Award- Austin Bailey, Charith Akurana Gamaralalage

Departmental Undergraduate Student Awards

Analytical Chemistry Award – Kristopher Keyes

Biochemistry Award – Laci Hadorn, Rosa Mendez

Poly/Ed Organic Undergraduate Chemistry Award – Mallory Gibson

Physical Chemistry Award - Kristopher Keyes

Undergraduate Chemistry Research Award – Laci Hadhorn, Evan Noel, Oleksandra Paschenko

Outstanding Chemistry Freshman Award – Tyson Roderique

ACS Organic Undergraduate Award – Kylie Proctor

Undergraduate Service Award (Chemistry Club) - Kristopher Keyes, Rosa Mendez, Kylie Proctor

Publications

Sara Alkhalaf, C. K. Ranaweera, P. K. Kahol, K. Siam, H. Adhikari, S. R. Mishra, Felio Perez, Bipin Kumar Gupta, K. Ramasamy, Ram K. Gupta, *Electrochemical Energy Storage Performance of Electrospun CoMn2O4 Nanofibers*, Journal of Alloys and Compounds 692 (2017) 59

Hitesh Adhikari, Madhav Ghimire, Charith K. Ranaweera, Sanket Bhoyate, Ram K. Gupta, Jahangir Alam, Sanjay R. Mishra, *Synthesis and electrochemical performance of hydrothermally synthesized Co3O4 nanostructured particles in presence of urea*, Journal of Alloys and Compounds 708 (2017) 628

Hitesh Adhikari, Dipesh Neupane, C.K. Ranaweera, John Candler, Ram K. Gupta, Santosh Sapkota, Xiao Shen, Sanjay R. Mishra, *Template-free synthesis of hierarchical mixed-metal cobaltites: Electrocapacitive and theoretical study*, Electrochimica Acta 225 (2017) 514

Camila Zequine, Charith Ranaweera, Z. Wang, Sweta Singh, Prasant Tripathi, O.N. Srivastava, Bipin Kumar Gupta, K. Ramasamy, P. Kahol, P.R. Dvornic, Ram K. Gupta, High Performance and Flexible *Supercapacitors based on Carbonized Bamboo Fibers for Wide Temperature Applications*, Scientific Reports 6 (2016) 31704

H. Adhikari, C. Ranaweera, R. Gupta, and S. R. Mishra, *Facile Hydrothermal Synthesis of Molybdenum Disulfide (MoS2) as Advanced Electrodes for Super Capacitors Applications*, MRS Advances 1 (2016) 3089

D. Neupane, H. Adhikari, B. Sapkota, J. Candler, R. Gupta, and S. R. Mishra, *Surfactant assisted synthesis of SrFe10Al2O19: Magnetic and Supercapacitor ferrite*, MRS Advances 1 (2016) 3099

Dustin Cummins, Ulises Martinez, Andriy Sherehiy, Rajesh Kappera, Alejandro Martinez-Garcia, Roland Schulze, Jacek Jasinski, Jing Zhang, Ram Gupta, Jun Lou, Manish Chhowalla, Gamini Sumanasekera, Aditya Mohite, Mahendra Sunkara, and Gautam Gupta, *Efficient hydrogen evolution in transition metal dichalcogenides via a simple one-step hydrazine reaction*, Nature Communications 7 (2016) 11857

C. K. Ranaweera, Z. Wang, Esam Alqurashi, P. K. Kahol, P. R. Dvornic, Bipin Kumar Gupta, Karthik Ramasamy, Aditya D. Mohite, Gautam Gupta, and Ram K. Gupta, *Highly stable hollow bifunctional cobalt sulfides for flexible supercapacitors and hydrogen evolution*, Journal of Materials Chemistry A 4 (2016) 9014-9018

A. Mekki, A. Dere, Kwadwo Mensah-Darkwa, Ahmed Al-Ghamdi, R.K. Gupta, K. Harrabi, W.A. Farooq, Farid El-Tantawy, F. Yakuphanoglu, *Graphene controlled organic photodetectors*, Synthetic Metals 217 (2016) 43-56

Bipin Kumar Gupta, Garima Kedawat, Pawan Kumar, Satbir Singha, Sachin R. Suryawanshi, Neetu Agrawal (Garg), Govind Gupta, Ah Ra Kim, R. K. Gupta, Mahendra A. Mored, Dattatray J. Late, Myung Gwan Hahm*, Field emission properties of highly ordered low-aspect ratio carbon nanocup arrays*, RSC Advances 6 (2016) 9932-9939

T. Shelby, S. Sulthana, J. McAfee, T. Banerjee, S. Santra. *Foodborne Pathogens Screening Using Magneto-Fluorescent Nanosensor: Rapid Detection of E. coli O157:H7*. JoVE 2017, In-Press.

Orielyz Flores, Santimukul Santra, Charalambos Kaittanis, Rania Bassiouni, Annette R. Khaled, Jan Grimm, and J Manuel Perez*, PSMA-Targeted Theranostic Nanocarrier for Prostate Cancer*. Theranostics, 2017, in-press.

B. Heckert, T. Banerjee, S. Sulthana, S. Naz, R. Alnasser, D. Thompson, G. Normand, J. Grimm, J. Kallu, J. M. Perez and S. Santra, *Design and Synthesis of New Sulfur-Containing Hyperbranched Polymer and Theranostic Nanomaterials for Bimodal Imaging and Treatment of Cancer*. ACS Macro Letters 2017, 6, 235-240.

S. Sulthana, T. Banerjee, J. Kallu, SR. Vuppala, B. Heckert, S. Naz, T. Shelby, O. Yambem, Santra, S. *Combination Therapy of NSCLC Using Hsp90 Inhibitor and Doxorubicin Carrying Functional Nanoceria*, Molecular Pharmaceutics 2017, 6, 235-240.

S. Naz, J. Beach, B. Heckert, T. Tummala, O. Pashchenko, T. Banerjee, S. Santra, *Cerium Oxide Nanoparticles: A "Radical" Approach to Neurodegenerative Disease Treatment*. Nanomedicine 2017, 12, 545-553.

T. Banerjee, T. Shelby, S. Santra, *How nanosensors may detect pathogen contamination before it ever reaches the dinner table*. Future Microbiology 2017, 12, 97-100.

T. Shelby, T. Banerjee, J. Kallu, S. Sulthana, I. Zegar, S. Santra. *Novel Magnetic Relaxation Nanosensors: An Unparalleled "Spin" on Influenza Diagnosis*. Nanoscale 2016, 8, 19605.

T. Banerjee, S. Sulthana, T. Shelby, B. Heckert, J. Jewell, K. Woody, V. Karimnia, J. McAfee, S. Santra. *Multiparametric Magneto-fluorescent Nanosensors for the Ultrasensitive Detection of Escherichia coli O157:H7*, ACS Infectious Diseases 2016, 2, 667.

C. Zequine, C. Ranaveera, Z. Wang, P.R. Dvornic, P.K. Kahol, S.S. Sing, R.G. Gupta, *High-Performance Flexible Supercapacitors Obtained via Recycled Jute: Bio-Waste to Energy Storage Approach*, Scientific Reports, 7 (2017) 0000; doi: 10.1038/s41598-017-01319-w; published on line: April 26, 2017.

A. Zlatanic, D. Radojcic, X. Wan, J. M. Messman, P. R. Dvornic, *Suppression of Crystallization in Polydimethylsiloxanes and Chain Branching in Their Phenyl-Containing Copolymers*, Macromolecules, 50, 3532, 2017; doi: 10.1021/acs.macromol.7b00474; published on line: April 18, 2017.

A. Alzharani, E. Allehyani, C.S. Hance, R.B. Westby, B.O. Tayo, and C.J. Neef, *Electrochemical Studies of Ferrocene and Maleimide Containing Alternating Copolymers*, Journal of Electroanalytical Chemistry, 2017, 786, 129-124

Grants

$340K; Honeywell: Preparation of Novel Silicone Terpolymers (Dvornic)

$255; Honeywell: Crosslinking and Compounding of Novel Silicone Terpolymers (Dvornic)

$50K; Kansas Soybean Commission: Novel Soy Oil-Silicone Foamed Elastomers (Dvornic)

$50K; Kansas Soybean Commission: (Gupta)

$45K; Ford Motor Co.: Novel Materials for ESD Protection (Neef/Gupta)

$50K; Kansas Soybean Commission: Modification of Soybean Oils for Use in Flame Retardant Polyurethanes (Neef)

$56K; K-INBRE (NIH-NIGMS) Bridging award: Activatable probes for imaging (Santra)

$15K; K-INBRE: New methods for infectious disease detection (Santra)

$55K; ACS-PRF (UNI) Award: Synthesis of petroleum-based new polymers (Santra)

$142K; NIH-R03: Nanosensors for influenza detection (Santra)

$100K: Kansas Soybean Commission: Methods for soybean-based polymers synthesis (Santra)

Donors & Scholarships

The Michael D. Corey Scholarship - Andrew Chesney, Katelynn Perkins

The William C. Dollar Scholarship - Andrew Chesney

The C.W. & A.D. Erickson Scholarship - Charles Ault, Alexis Carpino

The Lowell & Dorothy Eubank Endowed Scholarship - Haley Northcutt

The Paul & Elma Friley Scholarship - Devyn Rexwinkle, Abbey Rudisill

The Peter & Virginia Giddings Scholarship - Kajohna Davis

The Reginald O. Lyerla Scholarship - Tucker Morey, Dakota Robarts

William H. & June Stewart Munday Scholarship - Jessica Alumbaugh, Charles Ault, Jesse Cawthorn, Raven Cobbins, Claire Cook, Shelby Daniels, Paxton Davis, Amber Eck, Cooper Flory, Corine Funderburke, Christina Greene, Cole Griffin, Danielle Grisolano, Christiann Herron, Ashley Hobson, Tori Hogan, Taylor Holmes, Brett Houk, Caleb Jones, Kamau Kimaru, Korrie Kennedy, Rebekah Loudermilk, Alicia Lowrey, Jennifer Moffat, William Moore, Kiarra Murphy, William Oprisu, Katelynn Perkins, Keenan Powell, Kaitlyn Powers, Deborah Rivera, Kailey Scharff, Lok Shrestha, Alexis Smith, Deajia Tooley, Sydney Warren, Hannah Whitney

The Paul A. and Mary C. Oberholtzer Scholarship - Kajohna Davis, Kathryn Kolarik, Morgan Needham

The Emory W. Pitzer Scholarship - Alexis Carpino, Morgan Needham

The Fred & Wanda Plagens Scholarship - Ryan Asauskas, Aadrian McCollum, Jhoseline Mendez, Haley Northcutt, Shea O'Connor, Lazrua Osayande, Oleksandra Pashchenko, Katherine Salas, Hunter Satterfield, Riley Ulery, Jordyn Vogt, Sage Wood, Kaitlyn Young

The Norberta Wachter Schoene Scholarship - Momin Ansare, Devin Fitzgerald, Oleksandra Pashchenko

The Harold Seymour Memorial Scholarship: - Briana Ames, Colton Barnaby, Madison Clifford, Kathryn Kolarik

The William Seymour Scholarship - Kyle Wilkins

The Wallace and Mary Fern Souder Polymer Science Scholarship - Colton Barnaby, Nathan George

The Undergraduate Russian Chemistry Scholarship - Ilona Robinson

The F. Morgan Warzel Scholarship - Yakeline Avilla, Sarah Butler, Tevon Campbell, Corey Chaffee, Amy Diver, Dane Williams

The Zachary M. Willis Scholarship - Briana Ames, Tucker Morey

The Richard H. Woolery Endowment Scholarship - Shannon Ahmed, Abigail Bogner, Stephanie Phillips, Emilio Santana

Chemistry Departmental Scholarship - Ashton Atwood, Mia Bledsoe, Corey Chaffee, Chelsea Clements, Carlissa Davis, Amy Diver, Autumn Gillis, Tatiana Jimenez, Jenny Leroy, Jazzmine Lyons, Salehin Mahbub, Malachi Norris, Dalton Ogle, Divya Patel, Jacob Roberts, Monique Robinson, Abbey Rudisill, Jacenta Stewart

Thank you to everyone who has enjoyed reading our newsletter and has offered support to the chemistry department. Please, contact us by email (pdvornic@pittstate.edu) or by phone (620-235-4748) if you have any questions about the department or want to come in for a visit. You can also visit the departmental website (http://www.pittstate.edu/department/chemistry/) to see the latest happenings and news within the chemistry Department.