

2014 AMRI/Chemistry Summer Outreach Research Program

The 2014 AMRI/Chemistry Summer Outreach Research Program began on May 22 with the undergraduate students, who were joined by the high school students and high school teachers on June 2, and will continue through July 25, when the program closes with a poster session and a cook-out lunch.

This summer research program has continued every summer since 2002, when we started with a program for high school students and teachers. The next year, 2003, our program was expanded to include undergraduate students. This summer research program is designed to increase the awareness and understanding of scientific research among undergraduates, high school students and teachers. No prior research experience is required for participation.

Participants are conducting research each on an independent project in chemistry, physics, biology, or materials science. They attend weekly seminar programs allow for discussion of current scientific issues, general research concepts, and scientific ethics.

THE DIRECTOR'S CORNER

As our 2014 AMRI/Chemistry Outreach Summer Research Program nears completion, we would like to thank the 32 participants, including 16 undergraduates, 8 high school students, and 8 high school teachers for their research efforts over the past eight weeks. We also gratefully acknowledge the support of the NSF-REU program, the LA-BoR LA-SiGMA program, NASA Grant No. NNX13AR32A and the Louisiana Board of Regents who have made this year's program possible.

Our summer research results will be on display at the Poster Session followed by a celebratory BBQ on Friday, July 25. All are welcome to attend.

- - Leonard Spinu

REU Undergraduates



Allie Baldassaro attends Rhodes College. She is working for Dr. Zhengchang Liu on "Transcriptional Regulation of Hap4, a Global Activator of Mitochondrial Biogenesis".



Jamie Bolden attends Xavier University of Louisiana. She is working for Dr. John Wiley on "Synthesis, Topochemical Manipulation and Characterization of Perovskites".



Jennetter Brown attends Southern University. She is working for Dr. Weilie Zhou on "ZnO Nanowire Growth."



Lacie Duplessis attends Louisiana Tech. She is working for Dr. Matthew Tarr on "Photoproduction of Hydroxyl Radicals from Polycyclic Aromatic Hydrocarbons".



Jessica Talbert attends the University of New Orleans. She is working for Dr. Kevin Stokes on "Fabrication and Analysis of Nanowires".



Joana Franco attends Skyline College. She is working for Dr. Matthew Tarr on "Preparing New Nanocomposite Materials for Application as Environmental Photocatalysts".

LASIGMA REU Undergraduates



Edwin Gomez attends the University of New Orleans. He is working for Dr. Dhruva Chakravorty on "Computational Simulations of Graphene".



Brandon Buchanan attends Allegheny College. He is working for Dr. Leszek Malkinski on "Devising Processes of Release of Micro-Origami Patterns of Zinc Sacrificial Layer by Sublimation".



Taylor Gravolet attends Spring Hill College. She is working for Dr. Kevin Stokes on "Synthesis and Thermoelectric Conductivity of Polyaniline Doped with Bismuth Telluride Alloy".



Manvitha Marni attends Washington University in St. Louis. She is working for Dr. Leonard Spinu on "Fabrication and Analysis of Ni and Ni-Fe Nanowires".



Violet Lee attends the University of New Orleans. She is working for Dr. Matthew Tarr on "Drug Delivery Via Human Serum Albumin Nanoparticles Synthesis".



Andy Vuong attends Wake Forest. He is working for Dr. Zhengchang Liu on "Simulations of Ions in Ethylene Carbonate".



Adrianna Lochner attends the University of New Orleans. She is working for Dr. Matthew Tarr on "Preparing Perovskite Photovoltaics with Metal Nanostructure Substrates".



Steve Wagstaff attends Missouri University of Science and Technology. He is working for Dr. Steve Rick on "Simulations of Ions in Non-aqueous Solvents".



Vidal Loiseau attends the University of New Orleans. He is working for Dr. Kevin Stokes on "Synthesis and Properties of p-type Manganese Silicide Compounds for Thermoelectric Applications".



Camera Whicker attends the University of New Orleans. She is working for Dr. Dhruva Chakravorty on "Molecular Dynamics".

High School Students



Keiana Cave attends Lusher Charter High School. She is working for Dr. Matthew Tarr on "Formation of Aldehydes in Crude Oil Exposed to Sunlight".



Alexa Friedman attends Isidore Newman School. She is working for Dr. Matthew Tarr on "Photoproduction of Hydroxyl Radical from Polycyclic Aromatic Hydrocarbons."



Ben Rowley attends Northshore High School. He is working for Dr. John Wiley on "Synthesis, Characterization and Scrolling of Layered Perovskites and Perovskite-type Niobates".

LASIGMA High School Students



Yoselie Castaneda attends Ursuline Academy. She is working for Dr. Elliot Beaton on "The Level of Stress in Young Hispanic Population (4-10)".



Casey Johnson attends St. Mary's Academy. She is working for Dr. Christopher Summa on "Sequence and Structural Studies of Hemagglutinin from Influenza and Coronaviruses".



Taylor Payton attends Benjamin Franklin High School. She is working for Dr. Christopher Summa on "Sequence and Structural Studies of Hemagglutinin from Influenza and Coronaviruses".



Michael Stokes attends Northshore High School. He is working for Dr. Leonard Spinu on "Fabrication of Microwave Transmission Lines for Ferromagnetic Resonance Experiments on Magnetic Nanostructured Materials".



Kayla Tarr attends Patrick F. Taylor Science and Technology Academy. She is working for Dr. Weilie Zhou on "Effect of Different Parameters on the Growth of Titanium Dioxide Nanorods on FTO Substrate for Use in Dye sensitized Solar Cells".

RET High School Teachers



Samuel Dunn teaches at Ruppel Academy. He is working for Dr. Wendy Schluchter on "Cloning and Expression of opeB from *Synechococcus* sp. RSS 9915".



Angelle Giambrone is a teacher at Mount Carmel Academy. She is working for Dr. Matthew Tarr on "Developing a Method for the Detection of Aldehydes in Water".



Matthew Piediscalzo teaches at Mount Carmel Academy. He is working for Dr. Matthew Tarr on "Preparation of Photoproducts for Biological Use".

LASIGMA High School Teachers



Derek Bardell teaches at John Ehret High School. He is working for Dr. Christopher Summa on "Sequences and Structural Studies of Hemagglutinin from Influenza and Coronaviruses".



Patricia Colson-Cacioppo teaches at Mount Carmel Academy. She is working for Dr. Leonard Spinu on "Properties of Magnetic Nanostructured Materials".



Brian Carter is a teacher at West St. John High School. He is working for Dr. Leszek Malkinski on "Optimizing Silicon Growth Conditions to Form p-n Junctions for Silicon Solar Cells".



Lisa Hartman teaches at Ben Franklin High School. She is working for Dr. Steve Rick on "Zn and Mg Parametrization for Charge Transfer Model".



Seneca Joseph teaches at Westgate High School. He is working for Dr. Dhruva Chakravorty on "Investigating Self-Assembly of Surfactant Molecules".

New Faces

We welcome the following new additions to our AMRI staff:

Daniel Adams joins AMRI as a Summer Research Assistant for **Dr. Leonard Spinu**. Daniel was awarded a UNO Scholarship that will support his position as a Graduate Research Assistant in the DENAS program (Doctorate of Engineering and Applied Sciences through Physics Department) beginning in the fall.

Dr. Andrei Diaconu returns to AMRI as a visiting Post-Doctoral Researcher from the Department of

Electrical Engineering and Computer Science at "Stefan cel Mare" University in Suceava, Romania. He will work under the direction of **Dr. Leonard Spinu** on the Board of Regents LASiGMA project. Andrei received his Ph.D. in Engineering and Applied Sciences from UNO in Fall 2013.

Michael Kangni-Foli and **Chellda Exantus** join AMRI as short term scholars from the University Pierre & Marie Curie in France. They are part of the Chemistry/AMRI French undergraduate exchange student program and will work under the direction of **Dr. Leonard Spinu** and **Dr. Matthew Tarr**.

Dr. Seong-Gi Min returns to AMRI as a Post-Doctoral Researcher for **Dr. Leonard Spinu**. He has a PhD in Physics from Chunbuk National University in Cheongju, South Korea and extensive research experience in the fields of thin film fabrication, characterization, GMR/TMR, solar cell, ferrite materials, synthesis and characterization of new structure materials, magnetocaloric materials, and management of a clean room. Seong-Gi will be researching properties of magnetic systems and will operate the SQUID, EPR, and clean room.

Seyed Mohammad Ali Radmanesh joins AMRI as a Graduate Research Assistant. He will work for **Dr. Leonard Spinu** on the Board of Regents LASiGMA Project.

Recent Publications

"Exchange bias in (FeNi/IrMn)_n multilayer films evaluated by static and dynamic techniques," S. Khanal, A. Diaconu, J. M. Vargas, D. R. Lenormand, C. Garcia, C. A. Ross, and L. Spinu. *J. Phys. D-Appl. Phys.*, vol. 47, p. 255002 (8pp), Jun 2014.

"Synthesis and Thermal Stability Studies of a Series of Metastable Dion-Jacobson Double-Layered Neodymium-Niobate Perovskites," Elisha A. Josepha, Sara Farooq, Cinnamon M. Mitchell and John B. Wiley* *J. Solid State Chem.* **2014**, 216, 85-90. <http://dx.doi.org/10.1016/j.jssc.2014.04.024>.

"Synthesis of New Multilayered Dion-Jacobson Perovskites" Léa Gustin, Jérôme Lefebvre, Clare

Davis-Wheeler, Amy K. Pressley and John B. Wiley* *Mater. Res. Soc. Symp. Proc.* **2014**, (in press).

"Iron Oxide Nanotubes Synthesized via Template-based Electrodeposition," Jin-Hee Lim, Seong-Gi Min, Leszek Malkinski, and John B. Wiley* *Nanoscale* **2014**, *6*, **5289** - **5295**. DOI: 10.1039/C3NR06924A

"Peapod-type Nanocomposites via the *In Situ* Growth of Au Nanoparticles within Preformed Hexaniobate Nanoscrolls," Shiva Adireddy, Cecilia E. Carbo, Taha Rostamzadeh, Jose M. Vargas, Leonard Spinu, and John B. Wiley* *Angew. Chem. Int. Ed.* **2014**, *53(18)*, 4614-4617. DOI:10.1002/anie.201310834 and 10.1002/ange.201310834 ("Hot Article" and research highlighted on inside back cover).

Recent Presentations

"Topochemical Reaction Strategies for the Manipulation of Layered Oxides," Dariush Montasserasadi, Lea Gustin, Elisha Josepha, Shiva Adireddy, Taha Rostamzadeh, Cecilia Carbo and John B. Wiley, 18th International Symposium on Reactivity of Solids, St. Petersburg, Russia, June 9-13, 2014 (Invited talk).

"Precious Metal Based Nanopeapods," Taha Rostamzadeh, Shiva Adireddy, and John B. Wiley, 38th International Precious Metals Institute (IPMI) Conference, Orlando, FL, June 7-10, 2014 (Talk).

"Multistep Topochemical Intercalation for the Formation of the Novel Layered Perovskites (A₂ChH)LaNb₂O₇, Ch= Chalcogenides," Dariush Montasserasadi and John B. Wiley, American Conference on Neutron Scattering (ACNS), Knoxville, TN, Jun 1-5, 2014 (poster).

"Novel Approach towards Combining Plasmonic, Magnetic, and Semiconducting Nanostructures into Peapod-Type Nanocomposites," Shiva Adireddy, Cecilia E. Carbo, Jose M. Vargas, Leonard Spinu, and John B. Wiley, Materials Research Society, San Francisco, April 21-25, 2014. (talk)

"Fabrication of CeO₂ Nanocube-Containing Hexaniobate Nanopeapods," Taha Rostamzadeh,

Shiva Adireddy, and John B. Wiley, Materials Research Society, San Francisco, April 21-25, 2014. (poster)

"Tuning the Magnetization of Polymer Embedded Ferromagnetic Nanowire Arrays" Jagnyaseni Tripathy, Jose M. Vargas, Shankar Khanal, Leonard Spinu, and John B. Wiley, Materials Research Society, San Francisco, April 21-25, 2014. (poster)

"Ultra-low Temperature Measurements of London Penetration Depth in Iron Based Superconductors" Andrei Diaconu, Leonard Spinu, Jin Hu, Tijiang Liu, Bin Qian, Zhiqiang Mao, Catalin Martin ROMSC 2014, Iasi, Romania, June 13, 2014. (Keynote Speaker)

"Three dimensional nanoarchitectures: designing next generation devices" Weilie Zhou, IEEE EDS Dalian Chapter 2014 Mini-Colloquia, July 4-5, Dalian, China.

"Electron Microscopy Study of Nanomaterials for Energy Capture and Storage Applications", Weilie Zhou, International Workshop on Nanostructured Materials -Properties and Characteristics (2nd), June 30th-July 1st, Beijing, China.

Grants

"Directed Assembly of One-Dimensional Nanopeapod Structures through the Capture of Preformed Nanoparticles in Scrolled Nanosheets" \$12,000, UNO Office of Research and Sponsored Programs SCoRe program, 6/14-8/14. Awarded to Dr. John Wiley.

"Design of New CZTS/Perovskite Hybrid Solar Cells and Its Characterization by Frequency and Time Domain Techniques" LA NSF EPSCoR Link Fund. Awarded to Dr. Weilie Zhou.

AMRI NEWSLETTER

- - a publication of the
***Advanced Materials Research Institute,
College of Sciences,
University of New Orleans
New Orleans, LA 70148***

Phone: (504) 280-6840 / Fax: (504) 280-3185

e-mail address: amri@uno.edu

Compiled by: Amanda Lamastus, Lab Manager