AMRI NEWSLETTER

Advanced Materials Research Institute

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2014 AMRI/Chemistry Summer Outreach Research Program

The 2014 AMRI Summer Outreach Program began on May 22 for undergraduate participants, and June 2 for high school student and teacher participants. This year there were 32 participants: 16 undergraduates, 8 high school teachers, and 8 high school students. Twelve UNO faculty members from AMRI, Biological Sciences, Chemistry, Psychology and Physics acted as mentors: ***Drs. Matt Tarr, Elliot Beaton, Zhengchang Liu, Wendy Schluchter, Dhruva Chakravorty, Leszek Malkinski, Steven Rick, Leonard Spinu, Chris Summa, Kevin Stokes, John Wiley, and Weilie Zhou***.

Funding for this year's program was provided by the National Science Foundation (through: NSF-Research Experiences for Undergraduates, Award No. DMR-1262904; NSF Award CHE-1111525, and NSF Award DMR-1005856); by the Louisiana Board of Regents [through: LA-EPSCoR RII Award No. NSF(2010-15)-RII-UNO (also known as LA-SiGMA)]; by Xavier/NASA Award NNX13AR32A; and by the BP/The Gulf of Mexico Research Initiative.

During the summer program, the participants learned how to conduct research and worked on independent projects in chemistry, physics, psychology, biology, and/or materials science, as these fields relate to advanced materials, nanoscience, and nanotechnology. They worked in state-of-the-art laboratories, alongside experienced scientists (faculty, postdocs, and graduate students). In addition to their research activities, the participants attended weekly seminar programs which allowed for discussion of current scientific issues, general research concepts, and scientific ethics. During the course of the summer, our program participants also took part in a Meet-the-Faculty Pizza lunch, which gave them an opportunity to meet with professors and other researchers in an informal setting which acted as a vital mechanism for building relationships between the participants and faculty members. Such relationships provided key support to the program participants and dramatically strengthened their chances for success in scientific fields.

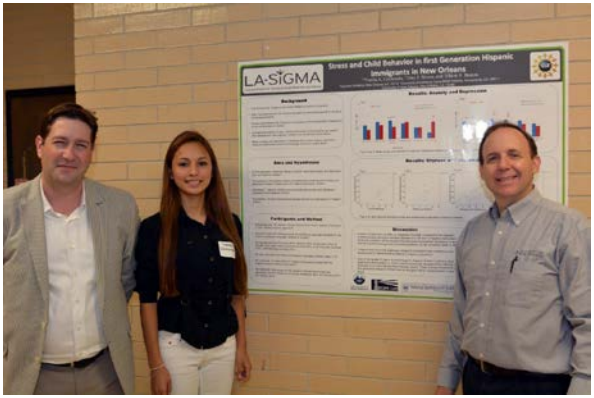
The conclusion of the 2014 AMRI Summer Outreach Program was July 25, 2014. On this day, participants took part in a Poster Session where they presented individual posters describing their projects and summarized the results they obtained. A celebratory cook-out lunch followed.

THE DIRECTOR'S CORNER

As we begin a new school year, 2014-2015, I want to take this opportunity to thank all of our researchers, collaborators, sponsors and students for the continued interest and support of our research activities at AMRI. Updated information regarding these efforts and our summer program can now be found on the new AMRI website: www.uno.edu/amri.

We welcome the prospect of continuing our work and look forward to new and exciting developments to be realized during the new school year.

*- - **Leonard Spinu***



Poster Session: Yoselie Castaneda with Drs. Beaton and Tarr

Poster Session: Keiana Cave, Angelle Giambrone and Derek Bardelle

Celebratory Barbeque

Would you like to help support AMRI programs and research?

Consider making a donation to the AMRI UNO Foundation account**.**

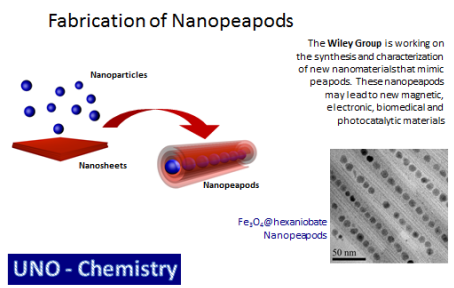
To donate, simply click on the link: https://www.unoalumni.com/cos-giving

Select AMRI from the drop down list in the designation field.

Thank you for your support of our organization!

Dr. John Wiley's NSF Grant Award

Congratulations are in order for ***Dr. John Wiley***, a Chemistry Research Professor and the Associate Director of AMRI. Dr. Wiley recently received a $405,000 grant award from the National Science Foundation for his work in the synthesis and characterization of nanopeapods. Media reports about the grant award were broadcasted on WDSU, the Associated Press, and other sources.



The nanosized pods are made of Fe_3O_4@hexaniobate and are arranged as ordered arrays of particle chains surrounded by ceramic sheets. These tiny particles may prove one day to have a large impact on optical, electronic, and medical devices and possibly be used to harness

sunlight to convert water to hydrogen gas. Hydrogen gas is a clean fuel source that can be used to power everything from rockets and life support systems in space to vehicles and heavy equipment on land.

This research is the culmination of efforts that began in 2011 with support from the Louisiana Board of Regents Post Katrina Support Fund Initiative.

AMRI Adds New ATL 160

AMRI has begun the operation of the new ATL 160 (Advanced Technology Liquefier) from Quantum Design. It was purchased with Louisiana Board or Regents funds through the Enhancement Program.

The ATL 160 recovers helium gas from liquid He cooled equipment as the PPMS and SQUID magnetometers. The current direct recovery system is able to recover about 75% of the used He and AMRi plans to upgrade this system with a high pressure system to achieve a 100% recovery rate of this expensive resource.

New Faces

We welcome the following new additions to AMRI:

Travis Gould joins AMRI as an undergraduate student worker. He will serve as a laboratory assistant in Dr. Leszek Malkinski's group.

Dr. Artur Maksymov joins AMRI as a Postdoctoral Researcher working in Dr. Leonard Spinu's group. He has a Ph.D. in Condensed Matter Physics from the Yuriy Fedkovych Chernivtsi National University of Chernivtsi, Ukraine and research experience in the field of magnetic materials. He will be assisting Dr. Spinu by investigating the properties of different magnetic systems and maintenance of the AMRI SQUID, EPR, and clean room.

Dr. Jose Vargas returns to AMRI as a visiting scholar from Oct 3 – Oct 31 from the Magnetic Resonance Laboratory of the Bariloche Atomic Center in Argentina. He will be presenting a seminar for AMRI faculty and staff and working on developing a joint collaborative research project between AMRI and his research group in Argentina.

Dr. Sylvester Tumusiime joins AMRI as a Postdoctoral Researcher working in Dr. Dhruva Chakravorty's group. He has a PhD in Plant Sciences from the University of Nottingham, England and research experience in the field of biomolecular chemistry, genetics, and biology. He will be investigating the molecular determinant driving the self-assembly of lipids and surfactants using computational chemistry methods and instructing undergraduate students in laboratory protocols and methods.

Recent Publications

"Magnetic Nanopeapod Composites," John B. Wiley* and Shiva Adireddy, *Magnetics Technology International* **2014**, *3*, 54 (invited magazine article). Link - http://viewer.zmags.com/publication/2235d3a9#/2232d3a9/56

"Evidencing the Existence of Intrinsic Half-metallicity and Ferromagnetism in Zigzag Gallium Sulfide Nanoribbons", Yungang Zhou , Sean Li , Weilie Zhou , Xiaotao Zu, and Fei Gao, Scientific Report 4, 5773 (2014).

Recent Presentations

"Ultra-low Temperature Measurements of London Penetration Depth in Iron Based Superconductors" Leonard Spinu Seminar presented on September 24, 2014, University of Louisiana at Lafayette, Department of Physics.

Grants

"Directed Assembly of One-Dimensional Nanopeapod Structures through the Capture of Preformed Nanoparticles in Scrolled Nanosheets," NSF Chemistry, $405,000, 9/1/14-8/31/17. (NSF 1412670).

Upcoming Events

AMRI will participate in the Advanced Materials and Manufacturing: A Statewide Industry-Academia Workshop to be held November 7, 2014 from Noon-6p.m. at the Loews Hotel New Orleans.

AMRI will have an information booth at the Get to Know UNO 2014 event to be held on Saturday, November 22, 2014 from 10:00a.m. - 3:00 p.m in the University Center Ballroom. Details can be found at http://www.get2know.uno.edu/ or through the AMRI Office.

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