AMRI NEWSLETTER

Advanced Materials Research Institute

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AMRI Mardi Gras Review 2015

AMRI faculty, researchers, and students all gathered together at the Lindy Boggs Conference Center on Thursday, February 12, 2015 for an event. The occasion was the Annual AMRI Mardi Gras Review held every year during the week before New Orleans celebrates Mardi Gras. AMRI has been hosting this conference every year since February 1998. All the different research groups get a chance to present their research in a formal, conference setting and share ideas. The review held 3 research presentation sessions and ended with a student poster session competition. For the first time, cash awards will be given to the winners of the poster session.

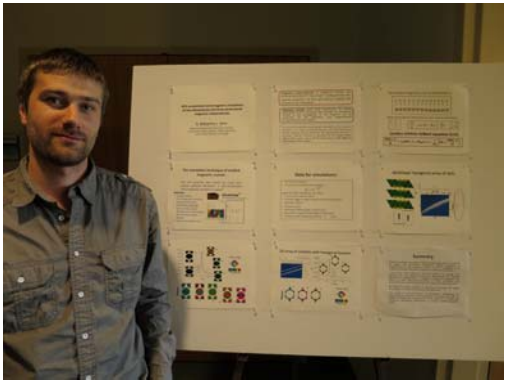
The student winners were as follows: First Place: Claire Davis-Wheeler, Second Place: Sara Akbarian-Tefaghi and Satish Rai, and Third Place: Sarah Wozny. The first place recipient will receive a $100 award, both second place recipients will receive a $50 award, and the third place recipient will receive a $25 award. Congratulations to the students for all their efforts in putting these posters together for the afternoon poster session. These awards were sponsored by a donation from Lakeshore Cryotronics, Inc.

THE DIRECTOR'S CORNER

Greetings! I am pleased to announce the upcoming Outreach AMRI Summer Research Program. This year's program will be held May 26 through July 24, 2015. We expect to have a total of 21 summer program participants, including 10 undergraduates, 6 high school teachers, and 5 high school students. We are grateful for the programs which are providing support for this program, including the NSF-REU program, the LA-BoR LA-SiGMA program, and look forward to a successful and productive summer.

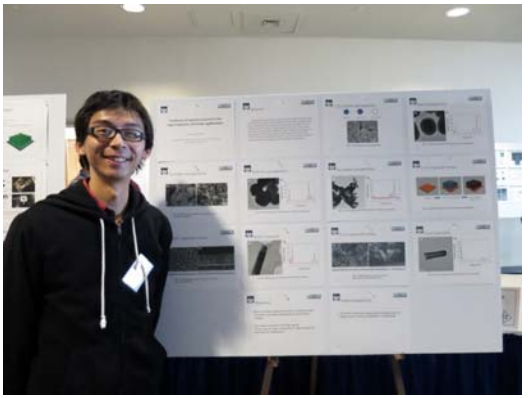
--Leonard Spinu

Sara Tefhagi presents a poster at the AMRI Review 2015



Dr. Artur Maksymov presenting during the Poster Session.

Dr. Matthew Tarr presenting on the AMRI Summer Program.



Graduate Student, Zhi Zheng with his poster.

AMRI Graduate Students and Professors Performing Research Away from Home

Two Graduate Students, Sarah Wozny and Leah Gustin, are working in laboratories out of town. AMRI's Graduate Student, Sarah Wozny and her supervisor, Dr. Weilie Zhou, has closely collaborated with with Dr. Mowafak Al-Jassim and Dr. Kai Zhu at the National Renewable Energy Laboratory (NREL) in Golden, Colorado since last summer. Specifically, Sarah is currently working intensively at NREL on a joint project involving the fabrication of perovskite solar cells and their characterization by advanced in-situ microscopy techniques to study crystallographic and stability observation of metal halide perovskite solar cells. The NREL has recently awarded Dr. Zhou's NPO grant to provide travel funds to cover Sarah Wozny's stay while she works at the national laboratory till the end of this summer for this joint project. Doctoral student Léa Gustin, from John Wiley's research group, just returned from a two month internship in Kyoto Japan working in Prof. Hiroshi Kageyama's group at Kyoto University, Katsura Campus. Lea was able to carry out some specialized experiments pertaining to her graduate research, specifically involving iron-containing layered perovskites synthesized here at UNO. This compound behaves in a very singular way upon heating, undergoing significant structural rearrangement. Going to Japan allowed her to use a variety of synthesis and characterization techniques not available here at UNO. For example, high pressure reactions using pressures up to 6GPa and Mössbauer Spectroscopy, in Prof. Shimakawa's laboratory on Uji Campus, were used in the study of her samples. Further she was also able to work with Prof. Kageyama's students on their research as well as participate in group meetings and other formal

presentations. Congratulations to the students and Dr. Zhou and Dr. Wiley for all their hard work and success with these projects.

Physics Undergraduate Wins at Innovate UNO 2015

Congratulations to ***Jessica Talbert***, a Physics undergraduate student and student in the 2014 AMRI Summer Outreach Research Program. Jessica was awarded 5th place for her poster, "Analysis of Nanowire Growth on AAO Templates With Various Electrodes." UNO's office of Research and Sponsored Programs hosts this yearly event as a forum where undergrads can present their creative endeavors and research efforts to the UNO community. Students can present their work in a poster, oral presentation, art display, performance, or screening. All academic disciplines are eligible.

Spring AMRI Graduate Student Travel Grant Awards

AMRI was able to award 3 Graduate Students travel grant awards to attend a conference and present research results. Satish Rai, Sarah Wozny, and Taha Rostamzadeh each were awarded $700 to use in their travel to the 2015 MRS Spring Meeting and Exhibit in San Francisco, California to be held April 6-10, 2015.

New Faces at AMRI

We welcome the following new addition to AMRI:

Mohammed Asif Khan joins AMRI as an undergraduate student worker. He will serve as a laboratory assistant in Dr. Leonard Spinu's group. He is part of the College of Science's Undergraduate Research Program (COSURP).

Guillaume Amand joins AMRI as an exchange student from University Institute of Technology from Poitiers, France. He will perform research in the laboratory of Dr. John Wiley.

Amaury Menard joins AMRI as an exchange student from University Institute of Technology from Poitiers, France. He will work on the synthesis and the characterization of perovskite solar cells in the laboratory of Dr. Weilie Zhou.

Recent Publications

"Enhanced Broad Band Photodetection through Piezo-Phototronic Effect in CdSe/ZnTe Core/Shell Nanowire Array," Satish C. Rai, Kai Wang, Jiajun Chen, Jason K. Marmon, Manish Bhatt, Sarah Wozny, Yong Zhang, Weilie Zhou, *Adv. Electron. Mater.* 2015, 1400050, DOI: 10.1002/aelm.201400050 (Front cover)

"Electrochemically Synthesized Polyethylene Glycol Coated Ferromagnetic Nanowire Arrays," Jagnyaseni Tripathy, Shankar Khanal, Jose M. Vargas, Leonard Spinu, and John B. Wiley* *Mater. Res. Bull.* 2015, *50,* (in press).

"Enhancing Electron Coherence via Quantum Phonon Confinement in Atomically Thin Nb3SiTe6J," Hu, X. Liu, C.L. Yue, J.Y. Liu, H.W. Zhu, J. B. He, J. Wei, Z.Q. Mao, L.Yu. Antipina, Z.I.Popov, P.B. Sorokin, T.J. Liu, P.W. Adams, S.M.A Radmanesh, L. Spinu, H. Ji, D. Natelson, *Nature Physics*, accepted, 2015.

"Fabrication of Thick Porous Anodized Aluminum Oxide Templates," Jagnyaseni Tripathy and John B. Wiley* *J. Solid State Electrochem.* 2015, (in press).

"Synthesis and Characterization of the Rare-Earth Dion-Jacobson Layered Perovskites, APrNb$_2$O$_7$ (A = Rb, Cs and CuCl)," Dariush Montasserasadi, Mark Granier, Leonard Spinu, Satish Chandra Rai, Weilie Zhou, and John B.

Wiley* *Dalton Trans.* 2015 (in press) (invited). **DOI:** 10.1039/C4DT03882G

"Controlling Pore Geometries and Interpore Distances of Anodic Aluminum Oxide Templates via Three-Step Anodization," Jin-Hee Lim and John B. Wiley* *J. Nanoscience Nanotech.* 2015, *15*, 633-641. DOI: 10.1166/jnn.2015.9245.

Recent Presentations

"Magnetization Dynamics in Periodic Magnetic Nanostructured Materials", Dr. Leonard Spinu, Invited seminar, Materials Science & Engineering program, Florida State University, March 25, 2015 (hosted by Prof. Eric Hellstrom).

Upcoming Events

AMRI will host the 2015 Outreach Summer Research Program. This year's program will be held May 26 through July 24, 2015. We expect around a total of 21 participants will join our laboratories to engage in research with our faculty and staff. This year the program is funded through National Science Foundation REU program and the Louisiana Board of Regent's LA-SiGMA program. We would like to extend our thanks to these agencies for their support in working to stimulate interest in the sciences.

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of our organization!

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