AMRI NEWSLETTER

Advanced Materials Research Institute

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THE DIRECTOR'S CORNER

The Institute has had a productive quarter and our faculty, students and staff are progressing well. Over the summer, AMRI again hosted both undergraduate and high school students in our outreach research program where the event culminated with exciting poster presentations and a bar-b-que. Also noteworthy for the last quarter is the growing impact of Advano; this start-up continues to bring additional energy to the institute offering collaborations and extensive knowledge in rechargeable battery technology. In the area of research, Leonard Spinu's group, in collaboration with Prof. Zhiqiang Mao, have continued to uncover new materials with exciting properties (see feature article). And, AMRI is finally having an impact in social media – we now have a Facebook account; please friend us. – *John Wiley*

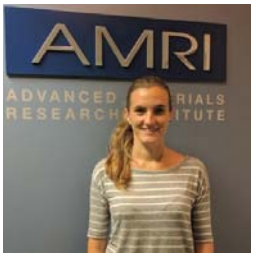
Research Efforts Unveil a New Class of Quantum Materials

Dr. Leonard Spinu and his research team at AMRI are now part of an exciting discovery in the science of new materials. You can read about this discovery published in the highly respected *Nature Materials* journal – see publications list at the end of the newsletter. Dr. Spinu and his graduate students, Ali Radmanesh and Daniel Adams, have helped to unearth a novel magnetic topological semimetal that acts as if it has no mass and that represents a new quantum state of matter. This research will hopefully impact technological advances in energy-saving electronics. Radmanesh performed high magnetic field measurements at the National High Magnetic Field Laboratory in Tallahassee, while Adams helped with measurements carried out in the AMRI laboratories. The team effort was led by Dr. Zhiqiang Mao and the Quantum Materials Research group at Tulane University. Researchers from UNO, LSU, Oak Ridge National Laboratory, National High Magnetic Field Laboratory in Tallahassee and Los Alamos, and Florida State University provided insight and collaboration. In a recent interview

at UNO, Dr. Spinu highlighted the unique capability that AMRI has of measuring and characterizing the magnetic properties of these new particles. This research was funded through the National Science Foundation and the Louisiana Board of Regents. A recent press release from UNO about Dr. Spinu's research can be found at:

http://www.uno.edu/campus-news/2017/Physicists-Help-Discover-Material-that-Could-Improve-Energy-Efficiency-in-Electronics.aspx

Visiting Scholar from Brazil



Paula Roberta Kern, a Visiting Scholar at UNO-AMRI completed a four-month research internship under the supervision of Dr. Leonard Spinu. Paula is a graduate student and Ph.D. candidate at the Federal University of Santa Maria in Santa Maria, Brazil. Since April 15, 2017, she conducted part of her doctoral research at AMRI, investigating the magnetic characterization of a set of NiFe/FeMn bilayers. For the static and dynamic magnetic characterization of these samples she conducted experiments using several AMRI instruments, including: the Vibrating Sample Magnetometer (VSM), Vector Network Analyzer (VNA), X-band spectrometer (EPR) and Physical Property Measurement System (PPMS). We wish her success upon her return home as she completes her research and her Ph.D. degree.

AMRI on Facebook

Check out the latest AMRI updates on social media. Announcements are posted weekly providing information regarding upcoming events, research group meetings, and awards and acknowledgements of AMRI students and faculty. Navigate to the link below and click the *Facebook* box/link for follow if you want to receive updates in your *Facebook* notifications list.

https://www.facebook.com/AMRI.University.New.Orleans

Survey

For those of you that have not yet had time to do so, we would appreciate your input and insights as a current or former member of AMRI. The survey should only take a few minutes to complete and at the end of the survey, you can include information that you would like to appear in the next newsletter – we would very much enjoy hearing from you. Access the survey at:

https://neworleans.co1.qualtrics.com/jfe/form/SV_0MUWaN72QmXa0o5.

New Faces at AMRI

Dr. Bingliang Liang joins Dr. Weilie Zhou's research group as a Visiting Scholar from the School of Materials Science and Engineering at Nanchang Hangkong University. He will visit for a full year and conduct research on creating and characterizing materials for applications with supercapacitors and piezoelectrics.

Recent Publications

Jeffery Aguiar, Nooraldeen Alkurd, Sarah Wozny, Maulik Patel, Mengjin Yang, Weilie Zhou, Mowafak Al-Jassim, Terry Holesinger, Kai Zhu, and Joseph Berry, "In Situ Investigation of Halide Incorporation into Perovskite Solar Cells," *MRS Communications*, 2017, 7 (3), 575-582.

J. Liu, J. Hu, Q. Zhang, D. Graf, H. Cao, S. Radmanesh, D. Adams, Y. Zhu, G. Cheng, Spinu, L.; et al, "A Magnetic Topological Semimetal Sr1-yMn1-zSb2 (y,z <0.1)," *Nature Materials*, 2017, 16 (9), 905-910.

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