Monday, July 30, 2018

The Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies Engineering Research Center (NASCENT ERC) and the Center for Dynamics and Control of Materials - Materials Research Science and Engineering Centers (CDCM MRSEC) hosted a poster symposium on Friday, July 27, 2018 in the Engineering and Education Research Center (EER) at The University of Texas at Austin (UT Austin) to display the work of participants in their Summer Research Experiences Programs.

Work was presented by participants in three programs: Research Experiences for Undergraduates (REU), Research Experiences for Teachers (RET), and the CISTAR Young Scholars Program.

**Research Experiences for Undergraduates** [4] offers undergraduate students the opportunity to work directly with faculty on interdisciplinary materials research projects involving chemistry, physics, materials science, and engineering disciplines. In addition to the research, students will participate in an organized program of lectures, lunches with CDCM faculty, laboratory visits and a variety of recreational activities.

**Research Experiences for Teachers** [5] allows science teachers from local elementary schools to participate in a 7 week program where they work alongside faculty and graduate students, participating in high-level research projects within the field of materials science. In addition to the research component, RET staff and faculty guide teachers to develop and teach materials science-based lessons that connect current research to K-5 science and mathematics curricula in the classroom, and promote materials science as an exciting career field that allows K-5 students to apply their math and science education to real-world problems.

**The Young Scholar Summer Research Program** [6] is a six-week summer research project for competitively selected high school students.
Participants from the following Centers were represented:

**NASCENT ERC** [7]

The NSF Nanosystems Engineering Research Center (NERC) for Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies (NASCENT) was funded in September, 2012. The center develops high throughput, high yield and versatile nanomanufacturing systems to take nano-science discoveries from the lab to the marketplace. [https://nascent.utexas.edu/](https://nascent.utexas.edu/) Faculty from Electrical Engineering, Chemical Engineering, Mechanical Engineering & Aerospace/Engineering Mechanics are involved. The Center is led by Prof. S.V. Sreenivasan [8] of The Department of Mechanical Engineering at UT Austin [9] and Prof. Roger Bonnecaze [10] of The McKetta Department of Chemical Engineering at UT Austin [11]. The boasts a wide array of education and outreach programs: RET (Research Experiences for K12 Teachers Program), high school students research internship (Young Scholars Program), the REU program and many more K-12 outreach activities. This is the 6th summer NASCENT has run these programs.

**Center for Dynamics and Control of Materials: an NSF MRSEC** [12]

Led by Prof. Ed Yu [13] of The Department of Electrical and Computer Engineering at UT Austin [14], the Center has faculty involved from Electrical and Computer Engineering [15], Chemical Engineering [11], Chemistry [16], and Physics [17]. The Center was funded through NSF in September, 2017. The Center for Dynamics and Control of Materials seeks to extend the traditional paradigm of materials research beyond the study of behavior in or near equilibrium to encompass the understanding and control of materials over extended temporal and spatial scales. The Center supports research on nanocomposite materials that combine inorganic and organic components, with applications in energy storage and filtration membranes, and on approaches for exploiting light to achieve dynamic, quantum control of materials. Through the concept of a Materials Community of Practice, the Center integrates interdisciplinary materials research with initiatives in education, outreach, and the promotion of diversity. The Center involves elementary school teachers in materials research to improve teacher efficacy and student engagement with science at a formative age. Outreach to the public via hands-on demonstrations and collaborations between artists and materials researchers brings materials science and technology to new audiences who might not otherwise be engaged. And partnerships with industry and the entrepreneurial community provide participants with experiences and connections to prepare them for success in a broad range of careers. This is the MRSEC?s first summer of summer research programs.

**National Nanotechnology Coordinated Infrastructure Texas Nanofabrication Facility (NNCl@UTexas)** [18]

Funded through NSF and run by Prof. Sanjay Banerjee [19] of The Department of Electrical and Computer Engineering at UT Austin
the Center supports an REU program each summer. The Texas Nanofabrication Facility involves four UT institutions: The Microelectronics Research Center (MRC) [20], Texas Materials Institute (TMI) [21], The Center for Nano and Molecular Sciences (CNM) [22], and Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies (NASCENT) [23]. The NNCl sites provide researchers from academia, government, and companies large and small with access to university user facilities with leading-edge fabrication and characterization tools, instrumentation, and expertise within all disciplines of nanoscale science, engineering and technology.

**UT System Louis Stokes Alliance for Minority Participation (LSAMP) [24]**

LSAMP is an REU program for University of Texas System students and is managed by the EOE offices in the Cockrell School of Engineering at UT Austin [25] and the College of Natural Sciences at UT Austin [26]. Since 1993, the University of Texas System Louis Stokes Alliance for Minority Participation (LSAMP) has sought to increase the number of underrepresented minority students pursuing degrees in science, technology, engineering, and mathematics (STEM careers). The alliance has also encouraged these individuals to earn Baccalaureate degrees and pursue a graduate education in the state of Texas through valuable research opportunities.

**NSF Center for Innovative and Strategic Transformation of Alkane Resources Engineering Research Center (CISTAR) [6]**

The CISTAR ERC is led by Prof. Joan Brennecke [27] of The McKetta Department of Chemical Engineering at UT Austin [11] and Prof. Fabio Ribeiro of Purdue University and includes participants from UT Austin and Purdue University with additional partners at Northwestern University, the University of New Mexico and the University of Notre Dame. The CISTAR ERC is aimed at developing new mobile technologies for converting natural gas into transportation fuels near rural natural gas sites.

**Source URL:** http://www.mrc.utexas.edu/news/nascent-and-mrsec-host-research-experiences-poster-symposium

**Links**
[4] https://mrsec.utexas.edu/research-experiences-undergraduates
[5] https://mrsec.utexas.edu/research-experiences-teachers
[7] https://nascent.utexas.edu/
[8] http://www.me.utexas.edu/faculty/faculty-directory/sreenivasan
[9] http://www.me.utexas.edu/