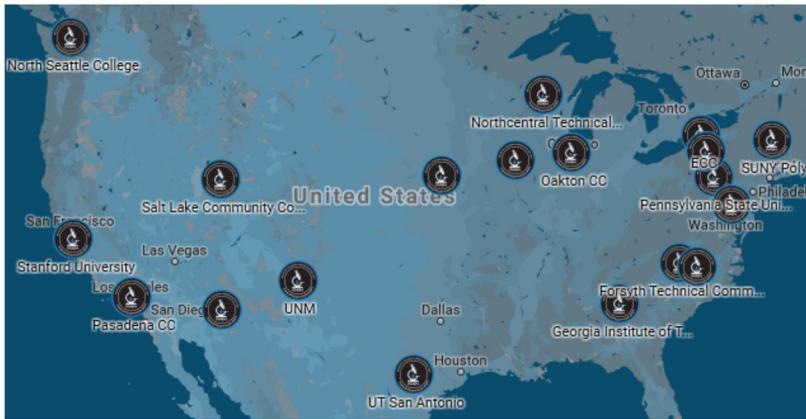


RAIN Partners in the News

- Multidisciplinary UI Research Team Uses Nanotechnology to Create Clot-Less Stent (<https://now.uiowa.edu/2018/09/multidisciplinary-ui-research-team-uses-nanotechnology-create-clot-less-stent>)
- SUNY Chancellor Tours ECC Campus in Amherst (<http://news.wbfo.org/post/suny-chancellor-tours-ecc-campus-amherst>)
- The following RAIN partners participated in the October 9 National Nanotechnology Day RAIN Open House: Arizona State University (NCI-SW at ASU), Cattaraugus-Allegany-Erie-Wyoming Board of Cooperative Educational Services (CABOCES), SUNY Erie Community College (ECC), Georgia Institute of Technology, Nebraska Nanoscale Facility, Pasadena City College (PCC), Penn State University (CNEU—NACK Network), Research Triangle Nanotechnology Network (RTNN), Salt Lake Community College (SLCC), and University of Iowa

RAIN Partners Around the U.S.



Arizona State University (NCI-SW at ASU) | Cattaraugus-Allegany-Erie-Wyoming Board of Cooperative Educational Services (CABOCES) | Coppin State | Erie Community College (ECC) | Forsyth Tech Community College | Georgia Institute of Technology | Nebraska Nanoscale Facility | Northcentral Technical College (NTC) | Northwest Vista College, Workforce Programs | North Seattle College (NSC—SHINE) | Oakton Community College (O.R.A.N.G.E.) | Pasadena City College (PCC) | Penn State University (CNEU—NACK Network) | Research Triangle Nanotechnology Network (RTNN) | Salt Lake Community College (SLCC) | Stanford University (nano@Stanford) | SUNY Polytechnic Institute | University of Iowa | University of Texas at San Antonio (UTSA) | University of New Mexico (SCME)

Let us Know

We hope you enjoyed this edition of the RAIN newsletter. We look forward to sharing our news and updates this year. We would really like to hear from you; if there is some subject or topic that you would like us to discuss or look into, please let us know. You can contact any member of the RAIN leadership team (<http://nano4me.org/remotearchive#Partners>) if you would like to become a RAIN partner. Visit and like us on Facebook: www.facebook.com/nanotechnology.rain.

Regards,
The RAIN Leadership Team



Bob Ehrmann
Pennsylvania State University

Jared Ashcroft
Pasadena City College

Frank Fernandes
Northcentral Technical College

Jim Smith
Salt Lake Community College

Rich Hill
Erie Community College

Ozгур Cakmak
Pennsylvania State University



The NACK Network, in the Penn State College of Engineering, is committed to supporting the development of two-year degree programs in micro and nanotechnology across the country by offering academic and educational resources.



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NANOWIRE

RAIN's Quarterly Newsletter



RAINdrops

- Welcome to the fall 2018 NANOWIRE issue! In this issue, we highlight how the Remotely Accessible Instruments for Nanotechnology (RAIN) Network is continuing to make significant impact across the nation. You could say that RAIN is "storming" across the nation.
- October 9 (or 10⁹) was National Nanotechnology Day. In celebration of the day, ten RAIN network providers held a nine hour "Nano in Motion" Rain Open House. The RAIN providers took turns enabling access to five different types of nanoscale equipment from within the RAIN stable. In total, 93 educators and students from secondary and post-secondary institutions from six states and three other countries attended these remote sessions. Six of the sessions were to classrooms while the other sessions were to educators giving RAIN a test drive. Some folks were so impressed that they participated for the entire day!
- The impact of the RAIN provider network continues to grow, offering more occasions for students (and teachers) from across the country to access and control the finest in nanoscale characterization and fabrication technology directly from their own classrooms. For example, the Northeast Advanced Technological Education Center (NEATEC), an NSF ATE Center, featured RAIN to 1,000 plus attendees at the recent Manufacturing Day Expo held in Utica, New York.
- In an effort to help get the word out, NANOWIRE will now feature the work of some of NSF's ATE projects in the Micro Nano Technological (MNT) area. This edition includes some highlights from Normandale Community College's DELIVER project.
- You can learn more about bringing RAIN into your classroom and find helpful educational resources on the RAIN webpage (<http://nano4me.org/remotearchive>). RAIN partners are eager to serve your classroom and to discuss any challenges you may be encountering in introducing your students to the nano-world. Please contact us at rainnetwork@engr.psu.edu for more information. You can also find more nano-world information on the RAIN Facebook page (<https://www.facebook.com/nanotechnology.rain>).

RAIN on display

RAIN Makes an Appearance at NEATEC's Manufacturing Day Celebration!

October is National Manufacturing Month. The Northeast Advanced Technological Education Center (NEATEC) celebrates each year by hosting an expo on the SUNY Polytechnic Institute campus. New York State manufacturers bring interactive exhibits, community colleges and student clubs share their STEM initiatives and NEATEC invites the public to learn about the new, high tech world of manufacturing. This event features over 50 exhibits and draws 1000+ people including middle, high school and college students, educators, unemployed, under-



employed, and people who are just interested in learning about advanced manufacturing opportunities and the educational pathways available.

This year, NEATEC's exhibit featured Remotely Accessible Instruments for Nano-

technology (RAIN). Participants could see images of specimens in both real size and nano size on large monitors located behind the booth. Students were asked to match the real size images with the nano size versions. They could also look at micrographs with the 3D glasses provided at the exhibit. SUNY Polytechnic's Lab Instructional Support Specialist, Paul Kutscha was on hand to explain the microscopes available at the college to create these images and to discuss with teachers how to bring remote access learning to their students.



ATE Impacts

The RAIN Network is part of the Nanotechnology Applications and Career Knowledge (NACK) Support Center, just one of the National Science Foundation's Advanced Technology Education (ATE) centers around the country. For the next few issues, we would like to focus on some of the projects that our fellow centers are working on. The following has been reproduced with permission from ATE Impacts 2018-2019 (www.atecentral.net).

Hands-on Technical Education DELIVERed via Telepresence



The Distance Education and Learning In Vacuum technology for Employment Readiness (DELIVER) project educates vacuum technicians, who are critical to national defense and advanced manufacturing. "Vac Techs" repair the complex vacuum systems used to create touch screens, computer chips, and military equipment.

DELIVER provides three, semester-length courses that integrate hands-on practice with vacuum equipment trainer (VET) systems developed by DELIVER staff and industry advisors.

DELIVER ships VET systems to off-site partners, while telepresence technologies bring students face-to-face with instructors. This enables students across the US to earn vacuum technology certificates and enter the workforce with in-demand knowledge and skills.

Telepresence technologies—cameras, microphones, and video screens bring students face-to-face with instructors as they practice hands-on skills with DELIVER's vacuum equipment trainer system.

Normandale Community College, Bloomington, MN (www.normandale.edu/vacuumtech.nsf)

Professional Development

The NACK Support Center is pleased to collaborate with the Nanotechnology Collaborative Infrastructure Southwest (NCI-Southwest) Center at Arizona State University to co-produce our 2018-2019 webinar series. Visit www.nano4me.org/ webinars for more information and to register.

November 15, 2018 at 1 pm EST

Identifying Nanobiotechnology-based Solutions for Opportunities in Personalized Healthcare

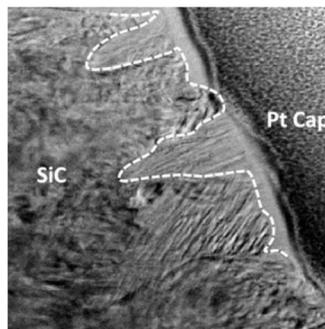
Researchers Joshua Smith and Stacey Gifford from IBM's Nanobiotechnology Program cover the latest research on the relevant biology found in fluids from liquid biopsies and discuss opportunities in microfluidics for disruptive technology development to isolate and interrogate these biomarkers, aiding disease diagnosis, prognosis, and treatment-response monitoring.



January 31, 2019 at 1 pm EST

Neural Interfaces: Nanoscience, and Materials Technology

Professor Stephen Sadow from the University of South Florida studies novel nano materials like Silicon Carbide, which can be used as micromachined semiconductor neural devices to help study the function of the brain. These implantable electrodes can potentially help us understand the functioning of the human nervous system.



tRAINing Appreciation

"We truly appreciate your support of our "Nanoscience: Little Doors Open Big Futures" high school course. The students enjoyed being able to see what we have been teaching. You were able to bring our lessons to life. Thank you!"

- The Nano Team, MathScience Innovation Center,
Yvonne Pfluger, Vonita Giddings, Norm Marshall

"Thank you so much again for the awesome session you put up together for us. I like the beginning introduction, nice and clear. I also enjoy the interaction you have with my students. Appreciate spending extra time to have all of the eight students scan the sample. Also thanks for taking time to get the AFM images of the Blue ray and DVD and show us. I cannot thank you enough for what you have done for our students."

- Amy Xin, Associate Professor, Chemistry, Butler County Community College