

Dear Colleagues and Friends,

The end of 2017 gives us the opportunity to pause and reflect on a year of great accomplishments from the A.J. Drexel Nanomaterials Institute.

This past year, DNI faculty, students, and alumni continued our excellent track-record of success, winning national and international awards, publishing highly cited articles, and engaging in targeted domestic and international research collaborations. For example, Nick Trainor was awarded the 2017 Lewis C. Hoffman Scholarship from the American Ceramic Society, and Michelle Torelli received a prestigious Morris K. Udall Undergraduate Scholarship. DNI Ph.D. alumna, Boris Dyatkin, received the Carbon Journal Prize this year in recognition for the best doctoral dissertation globally in the area of carbon and B.S. alumna Dr. Prineha Narang, currently faculty at Harvard, was selected by Forbes 30 under 30 in science. Three PhD students graduated in 2017 and three new joined our team. I also had the honor of receiving the Energy Storage Materials Award from Elsevier, an honorary doctorate from the Institute for Problems of Materials Science, Ukrainian National Academy of Science, and being selected as the inaugural Charles T. and Ruth M. Bach Endowed Professor at Drexel University. This professorship was established with a permanent endowment of \$2.2 million that will be used to fund DNI current and future research initiatives.

Our group also continues its strong track-record in translating scientific discoveries into artistic expressions. For example, a SEM image submitted by Dr. Babak Anasori and undergraduate student Leah Clark won this year's Science as Art competition at the Spring MRS meeting. Babak also led the DNI's 2<sup>nd</sup> International NanoArtography Competition, receiving over 100 submissions from across the globe. The competition was sponsored by Across Intl. and several departments of Drexel University. You can see some of our competition winners on this year's DNI calendar. Babak also received support from MRS to organize a Science in Video competition, with the winners announced at the Fall MRS Meeting in Boston.

Beyond awards, our group has also published more than 60 papers, including five papers in the *Nature* family of journals and many other excellent publications. Our international partnerships also continue to grow across the globe. Two of our Ph.D. students, Christine Hatter and Kathleen Maleski, expanded our partnership with the FIRST Nano<sup>2</sup> Co-op Center, a global research development center in collaboration with the Korea National Nanofabrication Center (NNFC) and Korea Advanced Institute of Science and Technology (KAIST), where we were ranked #1 among all international projects funded by the Korean National Research Foundation. We are currently preparing to send five undergraduate students to participate in this international collaboration. We also expanded our research efforts across China, specifically Jilin University, where we have established a joint lab, overseen by two DNI alumni, Prof. Gao Yu and Prof. Yohan Dall'Agnese. We continued our strong collaborations with partners across Europe, Africa, Australia, and the Middle East. I am pleased to report that we also had the opportunity to expand our mentorship of undergraduates with 4 undergraduate STAR Scholars, 7 co-op students, and one NSF REU in our lab this past year. We further expanded our educational outreach with a newly established partnership with Council Rock High School – North, hosting a class trip and currently mentoring three high school students in our laboratory.

I'm also glad to report that our industrial partnerships continue to flourish in the area of nanomaterials. We continued our strong relationship with Dentsply Prosthetics LLC and SI2 Technologies as well as many other companies. Through our Materials and Nanotechnology Industrial Consortium, the DNI facilitates interactions between companies and Drexel University researchers. The A.J. Drexel Nanomaterials Institute has significantly expanded its laboratory equipment, available for joint research with industrial collaborators. We also received several new grants from the Qatar National Research Foundation, KAUST, NSF, and two new research projects sponsored by DOD, further exploring the applications of MXene materials.

This is merely a glance at the many accomplishments stemming from the DNI and we look forward to the future accomplishments of our students, faculty, staff, and affiliates in the years to come.

Best wishes for 2018,



Yury Gogotsi, Ph.D., D.Sc.

Charles T. and Ruth M. Bach Distinguished University Professor of Materials Science & Engineering  
Director, A. J. Drexel Nanomaterials Institute

## Image Credits

**January:** The Space Base (SEM NaF image), Alberto Brambila Solórzano, Colima's University, Mexico

*1<sup>st</sup> Place NanoArtography Winner*

**February:** Bismuth heart (bismuth nanoparticles SEM), Wei Sun, Southeast University, China, *Honorable Mention*

**March:** Lucky Day (calcium molybdate), Ricardo Tranquilin, Federal University of Rio Grande do Norte – UFRN, Brazil

**April:** Nano-coral polyaniline with Nemo and Dory, Yuriy Smolin, *NanoArtography2016*

**May:** Evolution of peptide nanostructures, Charalampos Pappas, Advanced Science Research Center,

City University of New York, USA, *2<sup>nd</sup> Place NanoArtography Winner*

**June:** Red-Eared Slider, Saleesha Sin and Mohamed Alhabeab, Drexel University, USA

**July:** NanoWarhol (Ti<sub>3</sub>C<sub>2</sub> MXene particles), Michael Ghidui, Drexel University, USA

**August:** MXene Lion, The King of Catalysis, Babak Anasori, Saleesha Sin, Pavel Lelyukh,

*1<sup>st</sup> place in the Ceramographic Competition at MS&T*

**September:** MAX from Planet Mars, Armin Vahid Mohammadi and Majid Beidaghi, Auburn University, USA

**October:** Vanadium Oxide Leaves, Mallory Clites, Drexel University, USA, *3<sup>rd</sup> Place NanoArtography Winner*

**November:** MXenes in fibers, Sara Buondonno, Asia Sarycheva, Zehang Zhou, Shu Yang, Babak Anasori, Drexel, USA

*Materials Today Cover Competition 2016 Winner*

**December:** Oxygen reduction reaction at the nanoscale, Yohan Dall'Agnesse, Shinshu University, Jilin University, China

Designed by Danielle T. Kopicko, DNI