

What Can Nano Do?

After a decade of significant investment in the U.S. and around the world, we are often asked what nano can do beyond explore new regimes and combinations of materials. I have spent the last two weeks at meetings including *Partnering for Cures* in New York¹ and *Society for Neuroscience* in San Diego,² and this issue has come up repeatedly.

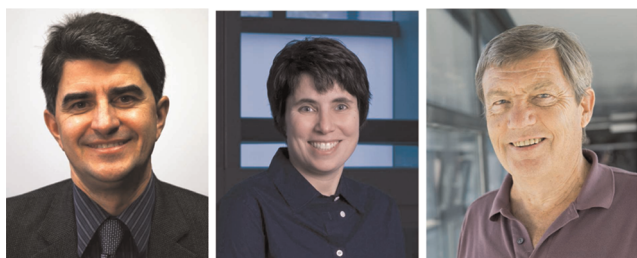
The former meeting was particularly relevant to the topic of what nano can do as nearly 200 foundations that are focused on preventing, treating, and curing specific diseases were represented. They are each intent on making the connections and supporting the research that will accelerate these advances for the patients they represent. With the incredible current and projected suffering and costs related to mental health and neurodegenerative disorders and the recently announced BRAIN Initiative,^{3,4} a recurring theme was the potential impact in these areas of the application of nanoscience and nanotechnology to neuroscience. From the measurement and stimulation of neural circuits in the brain, to understanding and surmounting biological barriers, such as the blood–brain barrier, to nanodelivery of therapeutics, many in our field are after these targets. The nanoscale matches many of the key biological scales; understanding how to leverage both what we have done and what we can do is at the center of many current targets and potential advances.

Our hope is that by laying out these challenges and opportunities, and helping to forge connections between scientists, engineers, clinicians, patients, foundations, government agencies, and interested others

The nanoscale matches many of the key biological scales

around the world, *ACS Nano* can play a key role in accelerating these advances. We have deliberately stepped up our coverage and consideration of nanomedicine and neuroscience; it is also the subject of many of our monthly formal and more frequent informal editors' and advisory board discussions. We are committed to broad coverage of the science and technology of nanoscale materials and phenomena and, in addition, we are likewise committed to identifying and to covering where and how we can have positive impacts on the world around us. We look forward to working with you on this adventure.

With our continuing growth, we are expanding our editorial team. This month *ACS Nano* is pleased to welcome three extraordinary new associate editors: Drs. Yury Gogotsi, Cherie Kagan, and Helmuth Möhwald.



Left to right: Drs. Yury Gogotsi, Cherie Kagan, and Helmuth Möhwald join *ACS Nano* this month as associate editors.

PHOTO CREDITS: PAVEL GOGOTSI, THE UNIVERSITY OF PENNSYLVANIA SCHOOL OF ENGINEERING AND APPLIED SCIENCE; AND MPI OF COLLOIDS AND INTERFACES/GERMAN GNAUDSCHUN, RESPECTIVELY

Dr. Yury Gogotsi joins us from Drexel University where he is Professor of Materials Science and Engineering and the Director of the A. J. Drexel Nanotechnology Institute. Dr. Gogotsi is internationally known for his work on synthesis and characterization of carbon nanomaterials and on applying advances in nanoscience to energy storage.^{5–7}

Dr. Cherie Kagan is a Professor of Electrical and Systems Engineering, Materials Science and Engineering, and Chemistry at the University of Pennsylvania, after starting her career at IBM Research. Dr. Kagan is internationally known for her work developing nanostructured materials and assemblies and using them in electronic and sensing devices.^{8–11}

Published online November 26, 2013
10.1021/nn4059105

© 2013 American Chemical Society

Dr. Helmuth Möhwald is the Director of the Max Planck Institute of Colloids and Interfaces, Potsdam-Golm. Dr. Möhwald is an expert across many disciplines in nanoscience, including polymers and supramolecular materials.^{12–14}

All three have already been strongly engaged with *ACS Nano*, and we are excited to have them now sharing their wisdom, thoughts, and energy with us as editors.

Disclosure: Views expressed in this editorial are those of the author and not necessarily the views of the ACS.

Acknowledgment. I would like to thank Dr. Heather Tierney for help in preparing this editorial.



Paul S. Weiss
Editor-in-Chief

REFERENCES AND NOTES

1. <http://www.partneringforcures.org/>.
2. <http://www.sfn.org/annual-meeting/neuroscience-2013>.
3. Alivisatos, A. P.; Andrews, A. M.; Boyden, E. S.; Chun, M.; Church, G. M.; Deisseroth, K.; Donoghue, J. P.; Fraser, S. E.; Lippincott-Schwartz, J. A.; Looger, L. L.; *et al.* Nanotools for Neuroscience and Brain Activity Mapping. *ACS Nano* **2013**, *7*, 1850–1866.
4. Weiss, P. S. President Obama Announces the BRAIN Initiative. *ACS Nano* **2013**, *7*, 2873–2874.
5. Behler, K. D.; Stravato, A.; Mochalin, V.; Korneva, G.; Yushin, G.; Gogotsi, Y. Nanodiamond-Polymer Composite Fibers and Coatings. *ACS Nano* **2009**, *3*, 363–369.
6. Mochalin, V. N.; Neitzel, I.; Etzold, B. J. M.; Peterson, A.; Palmese, G.; Gogotsi, Y. Covalent Incorporation of Aminated Nanodiamond into an Epoxy Polymer Network. *ACS Nano* **2011**, *5*, 7494–7502.
7. Zhou, H.; Rouha, M.; Feng, G.; Lee, S. S.; Docherty, H.; Fenter, P.; Cummings, P. T.; Fulvio, P. F.; Dai, S.; McDonough, J.; *et al.* Nanoscale Perturbations of Room Temperature Ionic Liquid Structure at Charged and Uncharged Interfaces. *ACS Nano* **2012**, *6*, 9818–9827.
8. Kim, D. K.; Vemulkar, T. R.; Oh, S. J.; Koh, W. K.; Murray, C. B.; Kagan, C. R. Ambipolar and Unipolar PbSe Nanowire Field-Effect Transistors. *ACS Nano* **2011**, *5*, 3230–3236.
9. Oh, S. J.; Kim, D. K.; Kagan, C. R. Remote Doping and Schottky Barrier Formation in Strongly Quantum Confined Single PbSe Nanowire Field-Effect Transistors. *ACS Nano* **2012**, *6*, 4328–4334.
10. Pelaz, B.; Jaber, S.; de Aberasturi, D. J.; Wulf, V.; Aida, T.; de la Fuente, J. M.; Feldmann, J.; Gaub, H. E.; Josephson, L.; Kagan, C. R.; *et al.* The State of Nanoparticle-Based Nanoscience and Biotechnology: Progress, Promises, and Challenges. *ACS Nano* **2012**, *6*, 8468–8483.
11. Oh, S. J.; Berry, N. E.; Choi, J. H.; Gauding, E. A.; Paik, T.; Hong, S. H.; Murray, C. B.; Kagan, C. R. Stoichiometric Control of Lead Chalcogenide Nanocrystal Solids To Enhance Their Electronic and Optoelectronic Device Performance. *ACS Nano* **2013**, *7*, 2413–2421.
12. Skorb, E. V.; Skirtach, A. G.; Sviridov, D. V.; Shchukin, D. G.; Möhwald, H. Laser-Controllable Coatings for Corrosion Protection. *ACS Nano* **2009**, *3*, 1753–1760.
13. Han, Y. S.; Shchukin, D.; Yang, J.; Simon, C. R.; Fuchs, H.; Möhwald, H. Biocompatible Protein Nanocontainers for Controlled Drugs Release. *ACS Nano* **2010**, *4*, 2838–2844.
14. Yan, X. H.; Blacklock, J.; Li, J. B.; Möhwald, H. One-Pot Synthesis of Polypeptide-Gold Nanoconjugates for *in Vitro* Gene Transfection. *ACS Nano* **2011**, *5*, 111–117.