polymer remains at the interface between aqueous and organic phases. Kaner demonstrated that when polyaniline forms at the interface between an organic phase containing aniline and an aqueous phase containing oxidant and acid, the doped polyaniline created is hydrophilic and immediately goes into the aqueous phase. This results in nanofibrillar morphology with high surface area and excellent sensing properties. Nanostructured conducting polymers can now be made in a simple, easily reproducible process with inexpensive reagents.

Kaner then showed that by changing the acid used, polyaniline nanofibers could be made in different average diameters ranging from 30 nm to 120 nm. Next, he reported an even simpler synthetic route to conducting polymer nanofibers called rapid mixing. He demonstrated that nanofibers are stable indefinitely in water simply by controlling the pH and salt concentration. With this discovery, Kaner created stable water-based dispersions of pure polyaniline (i.e., polyaniline paints and inks that contain no surfactants).

Kaner started a company, Fibron Technologies, Inc., that demonstrated the efficient synthesis of conducting polymer nanofibers at the 100 L scale. These advances have now been taken over by Water Planet Engineering, which is developing advanced membranes for important separations such as cleaning up the oily water left after hydraulic fracturing ("fracking") to recover oil. Future advances in processable conducting polymers developed by Kaner are anticipated to find applications in many products, including sensors, catalysts, and electronic devices.

Kaner has been recognized as a Distinguished Professor of Chemistry, University of California–Los Angeles (UCLA) (2012), Distinguished Professor of Materials Science and Engineering, UCLA (2012), has received the American Chemical Society Award in the Chemistry of Materials (2012), and is a Fellow of MRS (2011).

Chad A. Mirkin of Northwestern University to give plenary address at 2015 MRS Fall Meeting

Chad A. Mirkin, Director of the International Institute for Nanotechnology and the George B. Rathmann Professor of Chemistry, will give the plenary talk, "Programmable Materials and the Nature of the DNA Bond," at the 2015 Materials Research Society (MRS) Fall Meeting in Boston.

Mirkin's group has shown that when densely functionalized to the surface of a nanoparticle, nucleic acids arrange into a conformal shell that can be used to reliably control the spacing and symmetry of nanoparticle interactions. By elucidating a series of design rules for the nature of DNA bonds, they have assembled over 30 unique nanoparticle superlattices with precise control over particle size, interparticle spacing, and crystal symmetry. Overall, the unique properties of the DNA bond facilitate unprecedented opportunities to study atomic crystallization and energy transfer between nanostructures, and have already shown promise in plasmonic, photonic, and catalytic applications.

Mirkin is a chemist and a nanoscience expert, who is known for his discovery and development of spherical nucleic acids (SNAs) and SNA-based biodetection and therapeutic schemes, the invention of dip-pen nanolithography and related cantilever-free nanopatterning methodologies, On-Wire Lithography (OWL), coaxial lithography, and contributions to supramolecular chemistry and nanoparticle synthesis. He is the author of over 600 manuscripts and over 900 patent applications worldwide, and is the founder of multiple companies.

Mirkin is a member of the President's Council of Advisors on Science and Technology (Obama administration), and the only chemist to be elected to all three US National Academies (Institute of Medicine, National Academy of Sciences, and National Academy of Engineering). He is also a Fellow of the American Academy of Arts & Sciences, the American Association for the Advancement of Science, and MRS. □

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