which are the letters of the genetic code, can be identified. But a nanopore in graphene is the first nanopore short enough to distinguish between two closely neighboring nucleobases.

Several challenges still remain to be overcome before a nanopore can do such reading, including controlling the speed with which DNA threads through the nanopore.

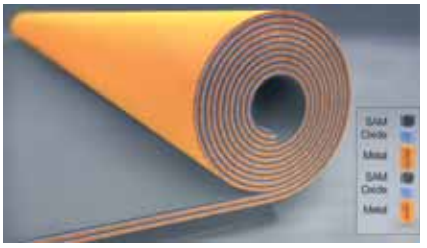
Other co-authors are W. Hubbard of Harvard, and A. Reina and J. Kong of MIT.

Nano Focus

Ultracompact self-wound nanomembranes exhibit exceptional supercapacitance

Designing ultracompact supercapacitors is a critical challenge for the development of next-generation compact electronic gadgets such as implantable biomedical devices. Currently available supercapacitors are too bulky for use in such small gadgets. Using nanoscale self-assembly techniques, C.C. Bof Bufon and O.G. Schmidt from Chemnitz University of Technology and IFW Dresden in Germany, and their colleagues have developed a method to fabricate self-wound ultracompact hybrid nanomembranes that are two orders of magnitude smaller than their flat counterparts with exceptionally high capacitance per footprint area.

As reported in the July 14th issue of *Nano Letters* (DOI: 10.1021/nl1010367; p. 2506), the research team deposited strained multilayered nanomembranes by sequential depositions of metal and dielectric thin films on a sacrificial layer. Selective etching of the sacrificial layer initiated self-rolling of the nanomembranes into cylinders. The compactness of the cylinders was reproducibly tuned by careful control of the processing parameters. Hundreds of self-rolled cylinders can be prepared in parallel on a single chip which can be reused repeatedly. Furthermore, the research team demonstrated that organic monolayers may be introduced in the inorganic films of the nanomembranes to reduce leakage currents. In addition, these organic monolayers could be potentially leveraged for biological and chemical functionalization of these electronic elements with organic molecules. This self-rolling process can occur in aqueous media at physiological pH and is thus compatible for incorporation of biomolecules.



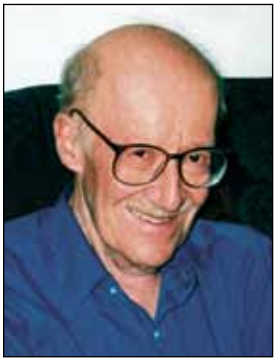
Self-rolled nanomembrane supercapacitor showing the hybrid layer sequence of self-assembled monolayer–oxide–metal. Reproduced with permission from *Nano Lett.* **10** (7) (2010) DOI: 10.1021/nl1010367; p. 2506.

The researchers believe that these ultracompact capacitors could be used to reduce size of energy storage elements, filters and signal converters in a variety of applications such as implantable biomedical devices and novel devices for energy harvesting.

Kaushik Chatterjee

In Memoriam:

Arthur Stanley Nowick



Arthur Stanley Nowick died on July 20 at age 86 of heart arrhythmia while swimming near his home in Newport Beach, Calif. He was a pioneer in the field of internal friction, anelasticity, and crystal defects.

He is the author of more than 200 publications in a wide range of fields in materials science and solid-state physics. His 1972 book *Anelastic Relaxation in Crystalline Solids* (Academic Press), co-authored with Brian S. Berry, is widely recognized as the definitive treatise on internal friction and anelasticity. He is author of the 1995 book *Crystal Properties via Group Theory* (Cambridge University Press). He is co-editor of two additional books on diffusion in solids. He was also an advisor to nearly 30 PhD students.

Nowick was the 1994 recipient of the David Turnbull Lectureship, bestowed by the Materials Research Society in recognition of career contributions to the fundamental understanding of the science of materials. The award cited his "pioneering work in anelastic and dielectric behavior in fast ion conductors, and in amorphous alloys," his "profound contributions to the understanding of grain boundary motion, morphological stability, the structure of surfaces and interfaces, and flow and diffusion as stochastic phenomena," and "his excellence in teaching and writing." His Turnbull Award Lecture, titled, "The Golden Age of Crystal Defects," elucidated the emergence of an understanding of crystal defects and explained his seminal contributions and those of his collaborators.

Nowick also received the Achievement Award from the American Society for Metals (1963), the A. Frank Golick Lectureship from the University of Missouri, Rolla (1970), and the Gold Medal from the 9th International Conference on Internal Friction and Ultrasonic Attenuation in Solids (1989). He was a fellow of the American Physical Society and of the Metallurgical Society of AIME. In

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