

## WVU's research is featured as journal front cover

Nick Wu group's nano-fabrication research is featured as the journal front cover of "Nanotechnology" (<http://ej.iop.org/pdf/nano/vol19/na0827-webcover.pdf>). This work is also highlighted by IOP Publishing (<http://nanotechweb.org/cws/article/lab/34500>). Nick Wu is Assistant Professor at WV Nano and Department of Mechanical Engineering in West Virginia University.

Two-dimensional (2D) nanostructure patterns have extensive applications in photonic devices, nanoelectronics, electrochemical devices, biosensors, catalysts and high-density magnetic recording devices. Commonly used patterning techniques, such as photolithography, electron-beam lithography, focused ion beam lithography and scanning probe microscopy (SPM) lithography have limitations on the fabrication of 2D nanostructures. It remains a challenge to develop low-cost, high-throughput, high-resolution techniques for fabrication of large-area (wafer-scale) 2D nanostructure array patterns with controlled feature size, shape and pitch.

Nanosphere lithography (NSL) is a simple, inexpensive, high-throughput, alternative routine for creating periodic nanostructure arrays. However, most of the sphere templates that were reported in previous literature have shown a well-ordered arrangement of nanospheres only in a small area of domain, which makes it difficult to create large-area nanoscale array patterns. Nick Wu's group at West Virginia University recently improved the nanosphere lithography method and demonstrated a low-cost, high-throughput, high-resolution technique for fabrication of large-area (wafer-scale), high-quality nanostructure array patterns with controlled feature size, shape and pitch. They have combined the nanosphere lithography technique with electrodeposition processing to devise a facile nanopatterning approach. By utilizing this approach, they have fabricated a nanowell polypyrrole array pattern and a gold nanohemisphere array pattern. This work was recently published in *Nanotechnology* (Vol.19, (2008), 275301), which is co-authored by Huaqing Li.

Their nanopatterning approach can be extensively used for nanodevice fabrication. They have demonstrated that the fabricated pattern can function as a nanoelectrode array (NEA). NEAs attract a lot of attention because they bring intriguing benefits over conventional macroelectrodes, including enhanced mass transport, lowered detection limit, improved signal-to-noise ratio, increased temporal resolution and the ability to make spatially resolved chemical measurements.

