

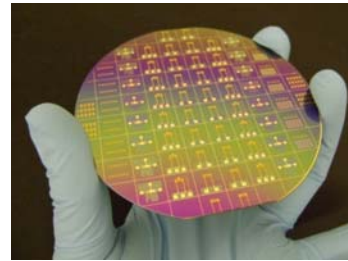
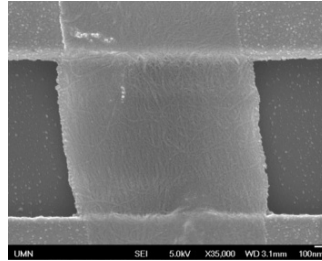
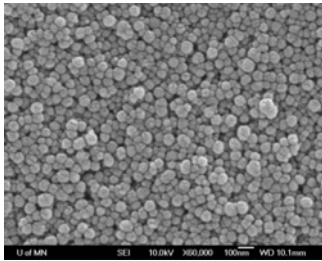
## “Bottom-up” Self-Assembly of Nano-Enabled Flexible MEMS/Electronics



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**ABSTRACT:** This talk presents the combination of “bottom-up” layer-by-layer (LbL) nano self-assembly and “top-down” micromanufacturing techniques for MEMS and electronics for biomedical applications. With nano self-assembly and surface micromachining, highly flexible nanoparticle-based cantilever platform for micro sensing and actuation was fabricated successfully. For flexible electronics devices, self-assembled silica nanoparticle thin film acted as the dielectric layer for field-effect transistors. Nanoparticle- and carbon nanotube-based field-effect transistors with embedded self-assembled films as dielectric and active layers were fabricated and characterized successfully as well. These self-assembled field-effect transistors were primarily investigated for high-performance bio-sensing applications.



**BIOGRAPHY:** **Tianhong Cui** is currently an Associate Professor of Mechanical Engineering and an Affiliate Senior Member of the graduate faculty in Electrical and Computer Engineering at the University of Minnesota. He joined the faculty of the University of Minnesota in 2003. From 1995 to 2003, he held research or faculty positions at Tsinghua University, University of Minnesota, National Laboratory of Metrology in Japan, and Louisiana Tech University, respectively. He received his B.S. from Nanjing University of Aeronautics and Astronautics in 1991, and his Ph.D. from Chinese Academy of Sciences in 1995.

His current research interests include MEMS/ NEMS and nanotechnology. He has more than 150 publications in MEMS and nanotechnology. His research has been sponsored by NSF, DARPA, NASA, DOE, etc. He received research awards including the STA & NEDO fellowships in Japan, the Alexander von Humboldt Fellowship in Germany, the Research Foundation Award from Louisiana Tech University, and the Richard & Barbara Endowed Chair from the University of Minnesota. He is a senior member of IEEE and a member of ASME. He is serving as an associate editor for IEEE Sensors Journal, Journal of Nanoscience and Nanotechnology, and Journal of Nano Research.