

MEMS are becoming 3D and atomically precise

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BIOGRAPHY



Andrei M. Shkel has been on faculty at the University of California, Irvine since 2000. From 2009 to 2013, he was on leave from academia serving as a Program Manager in the Microsystems Technology Office of DARPA, where he initiated and managed over \$200M investment portfolio in development of Microtechnology for Positioning, Navigation, and Timing. His research interests are reflected in over 200 publications, 30 patents, and 2 books. Dr. Shkel has been on a number of editorial boards, most recently as Editor of IEEE/ASME JMEMS and the founding chair of the IEEE Inertial Sensors. He has been awarded in 2013 the Office of the Secretary of Defense Medal for Exceptional Public Service, the 2009 IEEE Sensors Council Technical Achievement Award, and the 2005 NSF CAREER award. Dr. Shkel is the IEEE Fellow. He received his Diploma with excellence (1991) in Mechanics and Mathematics from Moscow State University, Ph.D. degree (1997) in Mechanical Engineering from the University of Wisconsin at Madison, and completed his postdoc (1999) at Berkeley Sensors and Actuators Center (BSAC).

ABSTRACT

Microtechnology comes of age. Clearly, some significant advances have been made, and we see a footprint of the technology in an ever-growing consumer electronics market full of interactive products enabled by microtechnology. These products include, for example, accelerometers for gaming, gyros for auto safety, resonators for clocks, and more. The questions remain, however: Is the technology really on the level of what we consider to be precision sensing? Is making sensors small necessarily result in degradation of performance? Why do we need the precision of sensing for our daily life and what are the opportunities if we have the precision at our fingertips? We are exploring a number of technological solutions, including micro glassblowing technology for precision sensing and silicon origami-like assembly techniques for classical and atomic MEMS; all to be discussed in this talk.

