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Seok Kim is an assistant professor in the department of mechanical science and engineering at the University of Illinois at Urbana-Champaign, IL, USA.

Prior to joining UIUC, he was a postdoc in Rogers Research Group where he advanced transfer printing process by employing his expertise on biomimetic dry adhesives. As an assistant professor, he proposed a new route of microassembly (termed 'micro-masonry') that utilizes transfer printing and material bonding techniques for multi small-volume rapid micro/nanofabrication. He received B.S. and M.S. degrees from Pohang University of Science and Technology, Pohang, South Korea and University of California at Los Angeles, CA, USA in 2000 and 2005, respectively. He completed a Ph.D. from Carnegie Mellon University, Pittsburgh, PA, USA in 2009.

Dr Seok Kim is a member of the multiple societies including ASME, MRS, IEEE and he is actively engaged as an associate editor and a reviewer for a number of journals.

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Transfer Printing-Based Micro/Nano-Manufacturing

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Abstract

Achieving micro/nanoscale thin membrane and/or complex 3D suspended structures are very challenging while such design is attractive in numerous MEMS/NEMS applications including switches, resonant devices and optical mirrors. In this poster, a route of microassembly via transfer printing and direct bonding, which is termed 'micro-masonry', for suspended MEMS/NEMS structures is presented. A carbon nanotube field effect transistor (CNFET) with air gap dielectric, suspended fully sealed and open nanoscale membranes, and a three-dimensional vertical comb drive for capacitive tilt motion are fabricated, experimentally characterized, and analyzed. The results in this work suggest that micro-masonry is suited for multi small batch but rapid fabrication of MEMS/NEMS structures.