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Bridging nano and macro: Multimaterial multifunctional fibers

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Recent developments in nanomaterial synthesis and characterization have led to unprecedented material properties and device performance. On the other hand, many important applications see urgent needs for advanced material and device capabilities and require large scale production of devices in order to make a real and significant impact. A big gap exists between the advanced nanotechnology and the macro scale applications. Here, I present a unique material platform that aim to bridge the nano and macro worlds: Multimaterial multifunctional fibers. I will introduce the scalable fabrication of multimaterial fibers via thermal drawing and the application of these flexible fiber devices in neural engineering, tissue engineering, drug delivery and optical sensing. In particular, I will focus on the multimodality fibers for simultaneous optical, electrical and chemical interrogation of neural circuits *in vivo* and the applications of these fibers in a single-step optogenetic study. This technology will allow for more detailed manipulation and analysis of the neural network in deep brain regions of behaving animals than what current technologies achieved.

Biography

Xiaoting Jia is an Assistant Professor in the ECE Department at Virginia Tech. Before joining Virginia Tech, she was a Post-doc Associate in the Research Laboratory of Electronics (RLE) at MIT. She has received her PhD in Materials Science and Engineering from MIT (2011), MS in Materials Science and Engineering from SUNY-Stony Brook (2006) and BS in Materials Science from Fudan University in China (2004). She has authored and coauthored 26 papers published in premier journals including *Science*, *Nature Biotechnology*, *Nature Neuroscience*, *Nature Communications*, etc. Her papers have been cited for over 6000 times in total. Her work on nanomaterials was covered by several media outlets (Nanotechweb, Foresight, etc.). She was a recipient of Materials Research Society (MRS) Graduate Student Gold Medal (2010) and the Translational Fellow at the MIT Research Laboratory of Electronics (2013).

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