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Ultra-small implantable probes with bend-up micro-electrodes[1]
XIANGBING JIAO, Material Science Engineering School, Arizona State University, QUAN QING, Department of Physics, Arizona State University — Implantable electrodes have been widely used for biomedical research and therapy. The biocompatibility of existing probe techniques is heavily hindered due to their big sizes and stiff mechanical properties that do not match with live cells and tissues. Different materials, geometry and strategies have been proposed to solve these challenges, but it is still a difficult task to reconcile the request for scaling down the size of probe, maintaining the mechanical strength for implantation surgery, while having the core structure flexible for bettering interfacing with cells. Here we propose a new strategy to address this challenge by integrating flexible micro-electrodes on a supporting ultra-small silicon shaft, which features the formation of a bend-up micro-electrode structure in situ only after the surgery. Keywords: bend-up micro-electrodes, biocompatibility, implantable probe

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