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Shape change biomedical engineering

Abstract: We envision that next generation biomedical devices will be smart, untethered, and responsive to their physiological environments to mimic or augment physiological functions and to make diagnostics, therapeutics and surgery more effective and less invasive. In this talk, I will describe our efforts to enable this vision. They include the development of strategies that leverage micro and nanoscale patterning with strain engineering to create curved, folded, and physiologically responsive materials and devices. As examples, I will detail our studies on biofabricated anatomically relevant layered and tubular self-folding tissue scaffolds, biochemically responsive actuators and untethered thermally responsive tools for drug delivery and minimally invasive surgery.
