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Shaping and morphing three dimensional structures using thin film stress

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The spatial patterning and stimuli-responsive manipulation of mechanical stresses within thin films can be used to self-assemble static and reconfigurable materials and devices. I will discuss the utilization of stresses associated with the minimization of surface tension, the relaxation of polycrystalline films, and the differential cross-linking of polymers and hydrogels to realize assembly and reversible actuation of functional structures of importance in electronics, optics and medicine.