Abstract Submitted
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Metal-insulator coexistence in VO_2 nanobeams[1] JIANG WEI, ZENGHUI WANG, WEI CHEN, DAVID COBDEN, University of Washington — We study the first-order metal-insulator transition (MIT) in vanadium dioxide nanobeams. The MIT occurs sharply at a temperature of $T_c = 67°$C at ambient pressure. However, in nanobeams clamped at both ends, and hence subjected to a constant length condition, there is a wide coexistence regime between the two phases, which can be visualized in an optical microscope. Above T_c the beam is under axial tension and on warming up follows the phase boundary in the tension/temperature plane. Below T_c the beam buckles under compressive strain. The metallic phase can be supercooled by up to 50 C. Usually there is a single metal-insulator domain wall in each beam, but a mobile bubble-like insulating domain can be induced by applying a nonuniform temperature profile..

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