Abstract Submitted
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Platform for applying uniform strain to VO2 nanobeams and other small crystals[1] BOSONG SUN, Department of Physics, University of Washington, ANA SANCHEZ, RICHARD BEANLAND, Department of Physics, University of Warwick, TAUNO PALOMAKI, DAVID COBDEN, Department of Physics, University of Washington — Many properties of crystals, including symmetry, equilibrium phase, band structure, and Bloch state properties such as Berry curvature and even topology, can be modified by strain. Conversely, controlling strain properly is essential for determining the intrinsic properties of many complex materials. We are therefore exploring ways to apply uniaxial stress to small crystals, ranging from two-dimensional materials to nanowires. For example, we have developed a platform for making samples with controlled built-in stress. In the case of VO2 nanobeams, this allows us to perform systematic studies on each of the several phases (R, M1, M2 and T) involved in the metal-insulator transition in a single sample using multiple microscopies, including transmission electron microscopy. Amongst other things we can image the T phase, study the propagation of interphase boundaries, explore the origin of putative noncentrosymmetricity, and seek diffuse contrast to locate the spinodal lines of the transition.

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