Abstract Submitted
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Correlations of local electronic properties in vanadium dioxide thin films[1] ADAM PIVONKA, KEVIN O'CONNOR, ALEX FRENZEL, CHANGHYUN KO, SHRIRAM RAMANATHAN, Harvard University, ERIC HUDSON, Penn State University, JENNIFER HOFFMAN, Harvard University — We probe the local electronic properties of a vanadium dioxide thin film using scanning force microscopy. We scan a conductive cantilever in contact mode across the surface of the sample. At each point, we sweep the voltage applied to the sample, obtaining current versus voltage curves with nanonscale resolution while inducing a transition from the insulating to metallic state. We identify individual grains of ∼50-100 nm, and extract the electronic properties of each grain, such as transition voltage, hysteresis, dielectric constant, and metallic state resistance. We discuss the correlations between these properties.

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