

Abstract Submitted  
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**Nanoscale Thermal Mapping of**  
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FRENZEL, KEVIN O’CONNOR, SHRIRAM RAMANATHAN, Harvard Univer-  
sity, ERIC HUDSON, The Pennsylvania State University, JENNIFER HOFFMAN,  
Harvard University — We present a method for nanoscale thermal imaging of insu-  
lating thin films. We image the local temperature of the metal-insulator transition  
in a VO<sub>2</sub> film, and investigate the role of Joule heating in two-terminal geometry.  
By sweeping the voltage applied to a conducting atomic force microscope tip in  
contact mode, we locally trigger and detect the transition to the metallic phase. By  
fitting the Poole-Frenkel conduction regime immediately preceding the transition,  
we extract the local temperature. Finally, we find grains displaying two electronic  
transitions, consistent with a locally stable intermediate insulating phase.

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