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**Contact-Free Electrical Measurements of VO<sub>2</sub> Powder** BENJAMIN HUBER, Rice Univ, WILL HARDY, HENG JI, DOUGLAS NATELSON, Rice U, NATELSON LAB TEAM — Vanadium dioxide (VO<sub>2</sub>) is a strongly correlated transition metal oxide with a metal-insulator transition at 67o C (in bulk). Researchers have often attempted to manipulate this transition through electrochemical gating, doping, and other processes. Because strain can strongly affect the transition, we examine VO<sub>2</sub> in comparatively strain-free powder form, though this is complicated by the difficulty of testing a powder's electronic properties. We study the transition by building small inductors and filling them with VO<sub>2</sub> powder, then using an AC inductance bridge setup to test for changes in inductance proportional to identical, empty inductors. The resulting figures clearly show a transition at temperatures similar to those found experimentally in nanowires, though some of the more intricate details of the plots remain surprising. Notably, the inductance of the VO<sub>2</sub> filled solenoid exhibits a peak when warming through the transition (rather than a step function change), and a dip upon cooling through the transition (again, rather than a step function change). We discuss these observations.

Benjamin Huber  
Rice Univ

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