

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Real-space and nanoscopic observation of phase transition behaviors of VO₂ thin films using Kelvin probe force microscopy DONG-WOOK KIM, AHRUM SOHN, Department of Physics, Ewha Womans University, TERUO KANKI, KOUTARO SAKAI, HIDEKAZU TANAKA, The Institute of Scientific and Industrial Research, Osaka University — VO₂ undergoes a metal-insulator transition (MIT) and a tetragonal-monoclinic structural phase transition (SPT) near room temperature. We carry out transport and KPFM (Kelvin probe force microscopy) measurements on epitaxial VO₂/TiO₂ thin films simultaneously in the temperature range of 285-330 K. The samples have large grains due to very small lattice mismatch, which allows us to study inherent nature of the phase transition in quasi-2D VO₂ system. The sample's work function decreases from 5.1 eV to 4.9 eV, while spanning the transition temperature. The work function maps can clearly reveal coexistence of the two distinct states at the intermediate temperature range, well explained by the 2D percolation theory.

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Date submitted: 13 Nov 2014

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