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Dielectric response in potassium tantalite/potassium niobate multilayers M. E. REEVES, SHUOGANG HUANG, George Washington University, JENNIFER SIGMAN, Sandia national Laboratory, DAVID NORTON, University of Florida, HANS CHRISTEN, Oak Ridge National Laboratory — We report measurements of the dielectric response of thin-film multilayers of potassium tantalite/potassium niobate. The measurements were made by evanescent-probe microscopy, a technique that is quite sensitive to material placed in the near-field proximity of the sample probe. The measurements were performed at a frequency of 1.7 GHz with the electric field polarized perpendicular to the plane of the film. Our results show that there are two distinct phase transitions. The first coincides with a structural transition in the material and indicates the onset of coupling between the potassium niobate layers. The transition moves to higher temperature as the spacing between the layers in increased. A second lower temperature transition indicates the onset of anti-ferroelectric ordering in the sample. The temperature of this transition is nearly independent of layer thickness and is not connected with a structural transition. The mechanism for the transitions will be discussed and data measured on asymmetric multilayers will be presented.

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