Abstract Submitted
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Electron-stimulated desorption ion angular distribution (ESDIAD) investigations of the rutile TiO_2(011)-(2x1) surface* SERGEY SOLOVEV, Rutgers State University, MATTHIAS BATZILL, ULRIKE DIEBOLD, Tulane University, THEODORE MADEY, Rutgers State University — A wide variety of potential applications have stimulated investigations of the atomic-scale properties of TiO_2surfaces. In a combined experimental and theoretical study it was shown recently that the rutile TiO_2(011)-(2x1) reconstruction is distinct from other TiO_2 surfaces: a model was proposed based on onefold coordinated (titanyl) oxygen atoms, giving rise to double-bonded Ti=O species at the surface [T. J. Beck et al., PRL 93 (2004) 036104]. These species may play a significant role in the enhanced photocatalytic activity of TiO_2(011). The present work is an attempt to provide a direct experimental test of the model. The ESDIAD method combined with LEED is used to determine the orientation of Ti-O bonds relative to the (2x1) surface. The ESDIAD data for O^+ exhibit two beams along [100] azimuths, each tilted $>$ 20 degrees from the surface normal; the data provide supporting evidence for the proposed model. *supported in part by NSF

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