

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Temperature and polarization dependent photoluminescence studies of WO_3 and WO_{3-x} single crystals¹ EMILY MAKOUTZ, Michigan Technological University, PRASENJIT DEY, DENIS KARAIKAI, University of South Florida — WO_3 is an important material not only due to its interesting electronic properties but also due to applications in electrochromic devices and energy storage. The mechanism behind the electrochromic effect has been debated for several decades [1]. We have studied two WO_3 single crystals, a transparent and doped WO_{3-x} . A photoluminescence center around 865 nm is observed after sub-band gap excitation at 405 nm with relatively higher intensity in the crystal containing oxygen vacancies. The center appears as a broad transition of 35 nm FWHM and does not follow the band gap energy with temperature. However polarization dependent studies reveal at least two polarization dependent components of the center. To further investigate the polarization dependence for the two WO_3 crystals, we will use samples for which the orientation of the high axis of symmetry is known.

¹This work was supported by NSF REU program (award No DMR-1004873).

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Date submitted: 17 Nov 2011

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