

Abstract Submitted  
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**Temperature and polarization dependent photoluminescence studies of  $\text{WO}_3$  and  $\text{WO}_{3-x}$  single crystals** PRASENJIT DEY, University of South Florida, JUSTIN EASLEY, Massachusetts Institute of Technology, DENIS KARAIKAI, University of South Florida, SATYEN DEB, National Renewable Energy Laboratory, TED CISZEK, Geolite/Siliconsultant, DANIEL DESSAU, University of Colorado, Boulder —  $\text{WO}_3$  is an important material not only due to its interesting electronic properties but also for applications in electrochromics and energy storage. The mechanism behind the electrochromic effect has been debated for several decades.<sup>1</sup> We have studied two  $\text{WO}_3$  single crystals, a transparent and a doped  $\text{WO}_{3-x}$ . 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 component of the center.

<sup>1</sup>Satyen K. Deb, Solar energy materials and solar cells **92**, 245 (2008), and the references therein.

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