

Abstract Submitted  
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**H $\alpha$  Fluorescence Intensity and Polarization from Photodissociated H<sub>2</sub>, D<sub>2</sub> and HD** J.R. MACHACEK, University of Nebraska-Lincoln, V.M. ANDRIANARIJAONA, Pacific Union College, J.E. FURST, University of Newcastle-Ourimbah, T.J. GAY, University of Nebraska-Lincoln, A.L.D. KILCOYNE, LBNL, A.L. LANDERS, Auburn University, K.W. MCLAUGHLIN, Loras College — We have measured the intensity and linear polarization of H $\alpha$  ( $n=3 \rightarrow n=2$ ) 656.3 nm fluorescence resulting from H and D atoms created by photodissociation of H<sub>2</sub>, D<sub>2</sub> and HD using linearly-polarized photons with energies ranging from 16.5 to 17.6 eV. Between the threshold for atomic  $n=3$  production at 16.6 eV and the  $n=4$  production threshold at 17.3 eV, the relative cross section and polarization data are free from cascade contributions due to higher-lying atomic states. The photon beam energy width used for this work was 3 meV. Comparison of relative intensities to previous measurements [1] show marked differences. However, the polarization is in qualitative agreement. [1] H. Frohlich *et al.*, Z. Phys. D **34**, 119 (1995). Support provided by the NSF (Grant PHY-0653379), DOE (LBNL/ALS) and ANSTO (Access to Major Research Facilities Programme).

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