Abstract Submitted for the OSS10 Meeting of The American Physical Society

The Electron Affinity of Indium and the Fine Structure of In⁻ Measured using Infrared Photodetachment Threshold Spectroscopy¹ C.W. WALTER, Y. LI, D.J. MATYAS, D.J. CARMAN, N.D. GIBSON, Denison University — The binding energies of the fine structure levels of the indium negative ion (In⁻) have been measured using infrared photodetachment threshold spectroscopy. The relative cross section for neutral atom production was measured with a crossed ion-beam-laser-beam apparatus over selected photon energy ranges between 300-670 meV. An s-wave threshold was observed due to the opening of the In⁻ ($5p^2$ 3P_0) to In (5p $^2P_{1/2}$) ground-state to ground-state transition, yielding an accurate value for the electron affinity of In. Thresholds were also observed for detachment from the J=1 and J=2 excited fine structure levels of In⁻, permitting accurate determination of the fine structure splittings of the negative ion.

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