

Abstract Submitted
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Measurement of the Electron Affinity of Thallium by Photodetachment Threshold Spectroscopy¹ C.W. WALTER, N.D. GIBSON, G.R. DRUMM, Y. LI, S.M. MILLER, Denison University, Granville, OH — The electron affinity of thallium has been measured using tunable laser photodetachment threshold spectroscopy. The relative cross section for neutral atom production following photodetachment from Tl^- was measured with a crossed laser-ion beam apparatus over the photon energy range 0.30 – 0.50 eV. An *s*-wave threshold was observed due to the opening of the Tl^- ($6p^2\ ^3P_0$) to Tl ($6p\ ^2P_{1/2}$) ground-state to ground-state transition, yielding a preliminary value for the electron affinity of thallium. The electron affinity measured in the present work is compared with previous experimental [1] and theoretical [2] results.

[1] D. L. Carpenter, A. M. Covington, and J. S. Thompson, *Phys. Rev. A* **61**, 042501 (2000); [2] see for example J. Li, Z. Zhao, M. Andersson, X. Zhang, and C. Chen, *J. Phys. B-At. Mol. Opt. Phys.* **45**, 165004 (2012).

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