

Abstract Submitted
for the SES13 Meeting of
The American Physical Society

Photodetachment Spectroscopy of the S_2^- Anion¹ JOHN YUKICH, JESSICA BARRICK, Davidson College — Numerous experiments have investigated the properties and dynamics of single-atom negative ions. Similar experiments may also be conducted with molecular anions. Laser photodetachment spectroscopy of such ions is more complex due to rotational and vibrational structure, but often yields spectroscopic benchmarks such as rotational constants and vibrational energies. We have conducted low-resolution photodetachment spectroscopy of the S_2^- anion over a range of roughly 2000 cm^{-1} . The ions are created in a Penning ion trap by a two-step dissociative attachment process. The photodetachment is achieved with a tunable titanium:sapphire laser. Our results are consistent with a model adapted from previous studies of single-atom photodetachment, and also show evidence of successful evaporative cooling of the ion cloud. Future experiments will focus on high-resolution detachment spectroscopy of these and other ions with an eye toward measurement of their molecular constants.

¹Support from the Davidson Research Initiative and the American Chemical Society.

John Yukich
Davidson College

Date submitted: 20 Sep 2013

Electronic form version 1.4