

## DIODE LASER SPECTROSCOPY OF $\text{SD}_3^+$

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Three of the four fundamental bands of the  $\text{SH}_3^+$  ion were observed by Amano *et al.*<sup>a</sup> Much less is known about the fully-deuterated isomer,  $\text{SD}_3^+$ . An *ab initio* calculation by Botschwina *et al.*<sup>b</sup> predicted the  $\nu_1$  and  $\nu_3$  band origins at 1832 and 1839  $\text{cm}^{-1}$  respectively, but there have been no previous experimental observations of this isomer.

In this talk we will discuss our observation of the absorption spectrum of  $\text{SD}_3^+$  in the region between 1750-1870  $\text{cm}^{-1}$ . The ion was generated in a methanol-cooled hollow cathode discharge of  $\text{D}_2$ , containing a trace quantity of OCS, and a series of spectra were recorded by means of a diode laser system. The  $\nu_1$  and  $\nu_3$  fundamentals of this ion perturb each other via a Coriolis interaction and a full analysis requires us to simultaneously fit both bands. The analysis is currently in progress, and our results will be discussed at this meeting.

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<sup>a</sup>T. Nakanaga and T. Amano, Chem. Phys. Lett. 134 (2), 195 (1987). T. Amano, K. Kawaguchi and E. Hirota, J. Mol. Spectrosc. 126, 177 (1987). T. Nakanaga and T. Amano, J. Mol. Spectrosc. 133, 201 (1989)

<sup>b</sup>P. Botschwina, A. Zilch, H.-J. Werner, P. Rosmus and E.-A. Reinsch, J. Chem.Phys. 85 (9), 5107 (1986)