

Abstract Submitted  
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**Long-lived complexes in the  $F + H_2O$  and  $F + CH_3OH$  Hydrogen Abstraction Reactions** ROBERT CONTINETTI, Univ of California - San Diego — Extending our recent study of the benchmark four-atom  $F \cdot H_2O$  system [1], we have now studied the dissociative photodetachment (DPD) of the seven-atom  $F^- (CH_3OH)$  cluster as well. The energetics of this system dictate that DPD only occurs to the  $HF + OCH_3 + e^-$  product channel on the neutral potential energy surface resulting in diagonal banding in the photoelectron-photofragment coincidence spectrum consistent with resolved HF vibrational excitation in the products. Evidence for photodetachment to long-lived ( $\mu s$ ) van der Waals complexes ( $FH-OCH_3$ ) was also observed, as in the  $F-H_2O$  system. The metastable states involved in  $F-H_2O$  are best described as vibrational Feshbach resonances, and the energetics and dynamics of the metastable complexes in the two systems will be examined. This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-FG03-98ER14879.

[1] Otto, R.; Ma, J.; Ray, A. W.; Daluz, J. S.; Li, J.; Guo, H.; Continetti, R. E., *Science* **343** (2014) 396.

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