

## USING PHOTOELECTRON AND ABSORPTION SPECTRA OF HYDRATED ELECTRON CLUSTERS TOGETHER TO BETTER UNDERSTAND THE ELECTRONIC PROPERTIES OF BULK WATER

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Photoelectron and absorption spectra of  $(\text{H}_2\text{O})_n^-$  clusters have been recorded by the Bowen Group at The Johns Hopkins University and the Johnson Group at Yale, respectively. It is interesting that all of the cluster spectra for both of these very different spectroscopies can be fit to the same empirical fitting function (Gaussian below peak center and Lorentzian above). Remarkably, the photoelectron and absorption spectra are almost identical in position and shape at  $n=11$ . The photoelectron and absorption sets slowly and smoothly separate as they grow towards bulk. While the absorption spectrum of the hydrated electron at bulk is well known, the extrapolation of the full photodetachment spectra to bulk is a new result. These results are evaluated in terms of a one electron model of the transition moment integral. Some of the consequences of these results for the electronic properties of bulk water will be discussed.