He CLUSTERS AS A MATRIX FOR PREPARATION OF Na-$(H_2)_n$ COMPLEXES

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Large He clusters (containing up to 10^4 atoms) have been employed as a substrate to produce Na-$(H_2)_n$ ($n < 10$) complexes, making use of the pick-up technique. Laser Induced Fluorescence and Beam Depletion are used to spectroscopically investigate such complexes in the frequency region of Na D lines. A strong exponential decay of the total amount of collected fluorescence is observed as a function of H_2 pressure in the pick-up region, while Beam Depletion Spectra intensities are virtually unaffected, thus demonstrating the high quenching efficiency of H_2. Spectra are then compared to those of Na atoms on pure He or H_2 clusters. Interestingly, spectra of Na-$(H_2)_n$ complexes show spectral features similar to those of Na on pure H_2 clusters only with smaller shifts with respect to the D lines position. Time resolved measurements are currently being taken and will be presented at the meeting.