# IDENTIFICATION OF ALKALI-OLIGOMER SPECTRA ON HELIUM NANODROPLETS BY LASER DEPLETION

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We have used a pump-probe scheme to identify spectra of alkali oligomers physisorbed on the surface of cold helium droplets. Most of them desorb from the droplet upon resonant laser excitation. We exploit this fact to selectively deplete dimers or trimers from the helium droplet beam by exciting known transitions. A few centimeters downstream of the depletion laser, laser induced fluorescence from the excitation of an unidentified band is recorded and the spectra with and without depletion laser are compared. A decrease of the fluorescence is observed when the depleted species and the one to be identified are the same and the two transitions being excited share the same initial state. New bands of the potassium trimer have been identified in this way. We have been able, as well, to separate strongly overlapping dimer and trimer spectra and to solve the assignment problem discussed by Brühl *et al.*[a]

[a] F. R. Brühl, R. A. Miron, and W. E. Ernst, *J. Chem. Phys.* **115** 10275 (2001)