OBSERVATION OF LOW J TRANSITIONS OF LASER ABLATED ALKALI HALIDES

BROOKE A. TIMP, JAMIE L. DORAN, KENNETH R. LEOPOLD, Department of Chemistry, University of Minnesota, 207 Pleasant St. SE, Minneapolis, MN 55455; JENS-UWE GRABOW, Institut für Physikalische Chemie und Elektrochemie, Gottfried-Wilhelm-Leibniz-Universität Hannover, Callinstraße 3A, 30167 Hannover, Germany.

Pulsed nozzle Fourier transform microwave spectroscopy has been used to observe low J transitions ($J = 1 \leftarrow 0$ and $J = 2 \leftarrow 1$) of several alkali halides produced by 532 nm laser ablation of pressed pellets. Spectra were readily located using predictions based on literature constants derived from higher J transitions but improvements of 10 to 100 kHz in spectral line positions are obtained. The additional accuracy could prove useful for astrophysical identification. The ⁴¹K isotopologue of KBr has been observed for the first time. Ablation of a mixed pellet of KCl and NaBr produces spectra of NaCl, indicating exchange between species produced by the ablation event. Aspects of the new experimental apparatus will be reported.