SPECTROSCOPY OF MOLECULES IN EXTREME ROTATIONAL STATES USING AN OPTICAL CENTRIFUGE

AMY S. MULLIN, CARLOS TORO, GERALDINE ECHIBIRI and QINGNAN LIU, *Department of Chemistry and Biochemistry, University of Maryland, College Park, MD 20742*.

Our lab has developed a high-power optical centrifuge that is capable of trapping and spinning large number densities of molecules into extreme rotational states. By coupling this device with high resolution transient IR absorption spectroscopy, we measure the time-resolved behavior and energy profiles of individual ro-vibrational states of molecules in very high rotational states. Recent results will be discussed on the spectroscopy of new rotational states, collisional dynamics in the optical centrifuge, spatially-dependent energy profiles and possibilities for new chemistry induced by centrifugal forces.