

ELECTRONIC SPECTROSCOPY OF JET-COOLED BeCu

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Diatomic molecules consisting of an alkaline earth atom (group IIa) bound to an alkali atom (group Ia) have attracted recent attention as molecules that may be suitable for direct laser cooling. At ultra-cold temperatures these molecules may be manipulated via their spins and molecular dipole moments. Diatoms composed of an alkaline earth atom bound to a coinage metal (group Ib) offer similar desirable properties, but there are very few experimental data for these species. We have now recorded electronic spectra for BeCu using one-color resonantly enhanced photoionization spectroscopy (REMPI). Progressions of vibronic bands were observed within the range from 32,894 to 35,273 cm^{-1} (energy of the first photon). Two-color REMPI measurements indicated that these excited states may be predissociated. A search for unperturbed lower energy electronic states is in progress. This work is being guided by our ab initio calculations (MRSDCI and MRCC) for the ground and low energy electronically excited states.