

CRYOGENIC PHOTOELECTRON SPECTROSCOPY OF MICROSOLVATED ANIONS AND HYDROGEN BONDED CLUSTERS

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Employing size-selective cryogenic photoelectron spectroscopy (cryo-PES) coupled with electrospray ionization (ESI), we have been studying the physical and chemical properties of a wide variety of complex molecular clusters ranging from microsolvated anions, hydrogen bonded complexes to atmospherically relevant pre-nucleation clusters. Our studies on a series of $B12X122-(H_2O)_n$ ($X = H, F, I$) clusters established the formation of hydridic-to-protonic dihydrogen bonds (DHBs) and unraveled the predominance of DHB strength by comparing to those conventional $B-X\cdots H-O$ ($X = F, I$) HBs. The primary gas phase hydration shell of hydroxide has recently been investigated as well.