INFRARED SPECTROSCOPY OF $[(H_2S)_2(X)_1]^+$ (X = WATER, METHANOL, AND ETHANOL): INFLUENCE OF THE MICROSOLVATION ON THE HEMIBOND

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Changes of the excess charge accommodation motif in hemibonded hydrogen sulfide by microsolvation are studied by infrared spectroscopy of the $[(H_2S)_2(X)_1]^+$ (X = water, methanol, and ethanol) clusters. While the hemibond in the $(H_2S)_2{}^+$ ion core is stable to the microhydration by a single water molecule, it is broken by the proton transfer with the microsolvation by a single methanol or ethanol molecule. Hetero hemibond formation between hydrogen sulfide and these solvent molecules is not observed. On the other hand, the H_3S^+ ion core in the protonated $H^+ (H_2S)_2$ cluster is switched to H_3O^+ ion core by the microhydration with a single water molecule, even though the proton affinity of water is lower than that of hydrogen sulfide.