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【222】 IR spectroscopy and reactivity studies of hydrated $\text{CO}_2^{\bullet-}$

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Gas phase studies have provided significant contributions to the understanding of activated CO_2 . The metastable $\text{CO}_2^{\bullet-}$ is stabilized by a solvation shell and $\text{CO}_2^{\bullet-}(\text{H}_2\text{O})_n$ can be studied readily by Fourier transform ion cyclotron resonance (FT-ICR) mass spectrometry. An EKSPLA NT277 optical parametric oscillator system is coupled into the reaction cell, covering the $2235\text{--}4000\text{ cm}^{-1}$ region at 1000 Hz pulse repetition rate. $\text{CO}_2^{\bullet-}(\text{H}_2\text{O})_n$ ($n \approx 43$) is studied via IR photodissociation spectroscopy. The products of the reaction between $\text{CO}_2^{\bullet-}(\text{H}_2\text{O})_n$ and small organic molecules are investigated. This provides information about the formation of covalent bonds and thermochemical data *via* nanocalorimetry.

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