

# INVESTIGATION OF BORN-OPPENHEIMER BREAKDOWN IN HCl AND HF BY THRESHOLD ION-PAIR PRODUCTION SPECTROSCOPY

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Threshold Ion-Pair Production Spectroscopy (TIPPS) <sup>a</sup> is applied to two pairs of isotopomers, HCl/DCI and HF/DF. From the high-resolution TIPP spectra, the Ion-Pair dissociation energies of the four molecules have been precisely measured, and from these their bond dissociation energies ( $D_0$  and  $D_e$ ) can be determined. In this way an experimental estimate of the Born-Oppenheimer breakdown in the long range limit of the ground state potential curve is obtained for HCl and HF. The experimental results about bond dissociation energies from this work are compared to the theoretical studies by Coxon and Hajigeorgiou <sup>b</sup>.

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<sup>a</sup>J. D. D. Martin, J. W. Hepburn, *Phys. Rev. Lett.* 79, 3154 (1997)

<sup>b</sup>J. A. Coxon, P. G. Hajigeorgiou, *J. Mol. Spec.* 203, 49 (2000)