RARE GAS MATRIX ISOLATION ESR (ELECTRON SPIN RESONANCE) STUDIES OF HYDROGEN HALIDE ANION RADICALS (HI^-, HBr^-, HCl^-, HF^-) GENERATED BY PLASMA DISCHARGE

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The HF^-/DF^-, HCl^-/DCl^-, HBr^-, and HI^- ion radicals have been generated by photoionization, trapped in neon matrices at 4 K, and invesigated by ESR (electron spin resonance) spectroscopy. The nuclear hyperfine interactions (A tensors) were fully resolved for both the hydrogen and halide nuclei. All the radicals proved to be monomeric anions, except for HF^-, which exhibited a dimeric molecular arrangement. Detailed information on electronic structure trends and comparisons with theoretical calculations will be presented.