THE SPECTROSCOPY STUDY OF UF AND UF^+

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Uranium metal has been laser ablated in a pulsed-jet expansion of 0.1% SF_6 in He to generate the fluoride. Spectroscopic data are obtained using the laser-induced fluorescence and resonance-enhanced multiphoton ionization techniques for gas-phase UF for the first time. The pulsed-field ionization zero electron kinetic energy (PFI-ZEKE) technique is used to study the low-lying states of UF^+. The ionization potential from PFI-ZEKE for UF is found to be D_e = 51137 cm^{-1}. Ω states up to $\frac{13}{2}$ and vibrational states v^+ = 0-4 are observed in the REMPI and PFI-ZEKE spectra. Assignments of the electronically excited states are based on measured Ω values and high-level ab initio calculations.