Abstract Submitted
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Photoionization and Electron-impact Ionization of Kr^{3+}[1] M. LU, G. ALNA'WASHI, M. HABIBI, R.A. PHANEUF, University of Nevada, Reno, A.L.D. KILCOYNE, A.S. SCHLACHTER, Advanced Light Source, LBNL, C. CISNEROS, G. HINOJOSA, UNAM Cuernavaca, Mexico — Using synchrotron radiation, photoionization cross sections for Kr^{3+} were measured in the energy range 39 - 143 eV for single-ionization and 120 – 137 eV for double-ionization. For comparison, electron-impact single ionization was measured in the energy range 43 - 179 eV. The Flexible Atomic Code (FAC) and Cowan atomic structure code were used to calculate energy levels, excitation and ionization energies and oscillator strengths for autoionizing transitions from the ground and metastable states. Ionization thresholds of metastable states ($^2P^o_{3/2}$, $^2D^o_{5/2}$) and ground state ($^4S^o_{3/2}$) were measured to be 46.62, 48.59 and 50.70 eV, 1-2 eV lower than NIST-tabulated values. Shifting the theoretical 3d-4p spectra by +1.56 eV for the FAC code and +0.81 eV for the Cowan code brings them into good agreement with experiment. Measured oscillator strengths agree with the calculations within experimental uncertainty. Resonant excitation-double-autoionization features are evident in the electron-impact ionization spectrum.

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