

Electron-Ion Recombination of N^{2+} and O^{3+} Ions

Authors : Shahin A. Abdel-Naby, Asad T. Hassan, Stuart Loch, Michael Fogle, Negil R. Badnell, Michael S. Pindzola

Abstract : Accurate and reliable laboratory astrophysical data for electron-ion recombination are needed for plasma modeling. Dielectronic recombination (DR) rate coefficients are calculated for boron-like nitrogen and oxygen ions using state-of-the-art multi-configuration Breit-Pauli atomic structure AUTOSTRUCTURE collisional package within the generalized collisional-radiative framework. The calculations are performed in intermediate coupling scheme associated with $\Delta n = 0$ ($2 \rightarrow 2$) and $\Delta n = 1$ ($2 \rightarrow 3$) core-excitations. Good agreements are found between the theoretically convoluted rate coefficients and the experimental measurements performed at CRYRING heavy-ion storage ring for both ions. Fitting coefficients for the rate coefficients are produced for these ions in the temperature range $q^2(102-107)$ K, where q is the ion charge before recombination.

Keywords : Atomic data, atomic processes, electron-ion collision, plasma

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