

Abstract Submitted
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Electron Impact Vibrational Excitation and Dissociative Attachment of Nitric Oxide CYNTHIA TREVISAN, University of California, Davis, KAREL HOUBEK, ZHIYONG ZHANG, Lawrence Berkeley National Laboratory, ANN OREL, University of California, Davis, CLYDE MCCURDY, University of California, Davis and Lawrence Berkeley National Laboratory, THOMAS RESCIGNO, Lawrence Berkeley National Laboratory — We present the results of an *ab initio* study of elastic scattering and vibrational excitation of NO by electron impact in the low-energy (0-2 eV) region where the cross sections are dominated by resonance contributions. We employ a nonlocal treatment of the nuclear dynamics, which is found to remedy the principal deficiencies of the local complex potential model. We also present cross sections for dissociative electron attachment to NO leading to ground state products, $O^-(^2P) + N(^4S)$. The calculations show that, while the peak cross sections starting from NO in its ground vibrational state are very small ($\sim 10^{-20}\text{cm}^2$), the cross sections are extremely sensitive to vibrational excitation of the target and should be readily observable for target NO molecules excited to $\nu = 10$ and above. Preliminary results of low-energy electron scattering by radical CF, which is isoelectronic with NO, will also be discussed.

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