

Abstract Submitted
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Resonance Processes in Electron-CF Collisions CYNTHIA TREVISAN, ANN OREL, University of California, Davis, THOMAS RESCIGNO, Lawrence Berkeley National Laboratory — CF radicals are by-products of semiconductor processing reactant gas C_2F_4 under electron bombardment. Since they are highly reactive and difficult to isolate under laboratory conditions, theoretical calculations are the only practical source for electron-CF collision cross section estimates. We have carried out an extensive set of *ab initio* calculations aimed at quantifying the various resonant collision processes that could lead to significant vibrational excitation and/or ion production in e^- -CF collisions. Near equilibrium geometry, CF and its negative ion states are similar to NO, which is isoelectronic with CF and which has been the subject of much recent theoretical and experimental study. The binding energy of CF, however, is significantly smaller than that of NO and, unlike NO, there are negative ion states that correlate with both F^-+C and $F+C^-$ (N^- does not exist). These differences make for some interesting comparisons and differences between e^- -CF and e^- -NO cross sections, which will be the focus of this work.

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