

GEC11-2011-000238

Abstract for an Invited Paper
for the GEC11 Meeting of
the American Physical Society

Electron attachment to radicals and other reactive molecules¹

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Electron attachment to highly reactive fluorocarbon species C_2F_5 and CF_2 has been studied experimentally with a TEM-TOF apparatus (TEM- Trochoidal Electron Monochrator; TOF - Time-of-Flight mass spectrometer; Field et al., J. Phys. B 38 (2005) 255). These reactive molecules have been generated *in situ* by fast atom reactions and by passing fluorocarbon precursors through a microwave discharge. In the case of C_2F_5 low energy electron attachment is observed with the formation of F^- at close to zero electron energy, however, no electron attachment to CF_2 was observed, despite theoretical prediction of a significant dissociative electron attachment cross section (Rozum et al., J. Phys. Chem. Ref. Data 35 (2006) 267). An upper limit for the dissociative electron attachment cross section of CF_2 has been estimated as $5 \times 10^{-4} \text{ \AA}^2$ at 1.8 eV, which is the thermodynamic threshold for F^- formation from CF_2 . (Graupner et al., New J. Phys. 12 (2010) 083035).

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¹Thanks to the EPSRC for funding through EP/F031025/1 and EP/C010787/1.