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### Electron Scattering from Molecules<sup>1</sup>

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Cross sections for low-energy electron-molecule scattering compose a relevant data basis for modeling discharge environments and for understanding important astrophysical and biological phenomena. In this talk I will present our progress with the Schwinger multichannel (SMC) method with pseudopotential (M. H. F. Bettega, L. G. Ferreira, and M. A. P. Lima, *Phys. Rev. A* **47**, 1111 (1993)) recently implemented with a better description of the target (R. F. da Costa, F. J. da Paixão and M. A. P. Lima, *J. Phys. B* **37**, L129 (2004)) to study electronically inelastic processes in electron-molecule scattering. Motivated by the relative success of our applications for H<sub>2</sub> (R. F. da Costa, F. J. da Paixão and M. A. P. Lima, *J. Phys. B* **38**, 4363 (2005)) and N<sub>2</sub> (R. F. da Costa and M. A. P. Lima, *Int. J. Quantum Chem.* **106**, 2664 (2006); *ibid*, *Phys. Rev. A* **75**, 022705 (2007)) molecules, we have obtained inelastic cross sections for few electronic states of CO, C<sub>2</sub>H<sub>4</sub>, C<sub>4</sub>H<sub>4</sub>O, and two important alcohols, CH<sub>3</sub>OH and C<sub>2</sub>H<sub>5</sub>OH. For e-furan scattering processes (M. H. F. Bettega and M. A. P. Lima, *J. Chem. Phys.* **126**, 194317 (2007)) I will discuss the influence of low-lying electronic states on the elastic cross sections and more important, the influence of polarization effects on the electronic excitation of these states by electron impact. For ethanol and methanol molecules I will show a comparative study for elastic and electronic inelastic processes that is being carried out within an international effort involving three Brazilian and two American groups.

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