

Abstract for an Invited Paper
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Differential cross-sections for elastic and inelastic electron scattering from fundamental polyatomic molecules¹

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The near-threshold scattering of electrons from polyatomic molecules of fundamental interest, e.g. water, primary alcohols and ring molecules e.g. furan, benzene are important in plasma fuel processes [1], plasmas used in biological processes e.g. in the treatment of skin diseases [2], astrophysical plasmas [3], etc. The determination of cross-sections for such molecules has gathered impetus because of the increasing number of applications industrial plasma and biomedical processes and the need to understand and model these complex processes. It is now possible to determine accurate differential cross-sections for electron scattering from these polyatomic molecules. We will present recent normalized, absolute low energy electron scattering differential cross-sections for near-threshold elastic and inelastic scattering from water, primary alcohols, furan and benzene using a well-tested electron spectrometer apparatus [4]. We will also compare our results with those of other experiments and available theoretical models, which show an encouragingly overall improved picture in terms of agreement between the different research groups. Funded by the National Science Foundation Research in an Undergraduate Institution Grant #s 0653452 and 1135203. This work was done collaboratively with Drs. V. McKoy and C. Winstead, Caltech, USA (National Science Foundation Grant # 0653396 and Office of Basic Energy Sciences, US DOE Grant) and Dr. M. C. A. Lopes, U. Fed. de Juiz de Fora, Minas Gerais, Brazil; Dr. M. H. F. Bettega, U. Fed. do Parana, Curitiba, Brazil Drs. R. F. da Costa and M. A. P. Lima, Universidade Estadual de Campinas UNICAMP and CTBE, Campinas, Brazil (CNPq, FAPESP, FAPEMG, Finep, CENAPAD-SP and CAPES grants).

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