

Abstract Submitted
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Electron swarm transport coefficients in H₂O - He mixtures: Experiment and calculations¹ J. DE URQUIJO, A.M. JUÁREZ, Instituto de Ciencias Físicas, UNAM, México, J.L. HERNÁNDEZ-ÁVILA, E. E. BASURTO, Departamentos de Energía y Ciencias Básicas, Universidad Autónoma Metropolitana, México, K.F. NESS, R.E. ROBSON, RON WHITE, ARC Centre for Antimatter-Matter Studies, School of Engineering and Physical Sciences, James Cook University, Townsville, Australia, M.J. BRUNGER, ARC Centre for Antimatter-Matter Studies, School of Chemical and Physical Sciences, Flinders University, Adelaide, Australia — In this presentation we report recent measurements of electron swarm transport coefficients using the pulsed-Townsend technique for mixtures of water and helium over the range of applied fields E/N from 0-200Td. Comparison is made with transport coefficients calculated using a multi-term Boltzmann equation solution and recently proposed electron-water cross-section sets. This represents a new and more discriminative test on the accuracy and consistency of such sets. Negative differential conductivity is observed for a small window of mixture ratios, even though the pure gases themselves do not demonstrate NDC. Similar interesting effects are observed in the ionization rates as a function of the mixture ratios. The origin of these behaviours will be discussed.

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