Elastic electron scattering from levulinic acid

LUIS RIOS, California State University Fullerton, ANDREA CILLIANI-MINEAU, Orange Coast College, KATE NIXON, University of Wolverhampton, LEIGH HARGREAVES, California State University Fullerton — Biofuels are a potential solution to the continued use of fossil fuels in the automotive industry. Atmospheric plasma treatment of biomass has demonstrated its potential to efficiently break down the protective lignin layer that limits ethanol production from cellulosic decomposition and is a barrier to the widespread adoption of ethanol fuels. In addition, cellulosic breakdown yields useful by-products that contribute to the financial viability of biofuels. We present elastic scattering differential cross section measurements for levulinic acid, one of the primary value-added chemicals in plasma assisted cellulosic breakdown. We present data for scattering energies less than 30eV and scattering angles from 10 degrees to 125 degrees. These data will facilitate modelling and process control improvements for plasma assisted biomass treatment.