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Gas diameter sensitivity in electron scattering from water molecules[1] LUIS RIOS, California State University Fullerton, ANDREA CILLIANI-MINEAU, Orange Coast College, LEIGH HARGREAVES, California State University Fullerton — Water is an important target for both biological and technological applications, and its scattering cross sections have received significant attention. However, water is also a complicated target for scattering measurements that rely on knowledge of its gas diameter, primarily elastic scattering data derived from the Relative Flow Method (RFM). While water is a geometrically small molecule, it has a large dipole moment that increases its effective gas diameter, although to what extent seems unclear. RFM measurements have been reported with estimates ranging from 2.89 through to 7.25 angstroms. Disagreements between several measurements currently available are potentially attributable to this issue. We present elastic scattering differential cross sections for water at energies less than 30eV. In addition to the DCS data, we have measured the apparent gas diameter for water in our own apparatus, and conducted sensitivity measurements to investigate the variation in the final measurements to the assumed gas diameter.

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