



The refractive index of volcanic ash and other aerosols

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The talk/poster will detail work that has been done on the development a new refractometer method for the measurement of fine aerosol particles (radius $< 500\text{nm}$). The aim of the device is to infer aerosol optical properties, principally the real part of their refractive index for visible wavelengths, from angular reflectance measurements of a turbid suspension containing the aerosol particles. The principle intended application is for the measurement of volcanic ash. The apparatus and method will be detailed. A brief description of the forward model (a coherent scattering model) that relates the reflectance measurements to the aerosol optical properties will be presented. In addition, a validation of the technique and apparatus will be outlined, including results for polystyrene test particles. The technique has been extended to sand and volcanic ash samples, and these results will also be presented. Variations in the measured ash refractive index were consistent with those expected from knowledge of the composition and source geology of the volcanic material.