

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of
CIVIL AND ENVIRONMENTAL ENGINEERING

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**" Viscosity of erythritol-water particles as a
function of water activity:
an inter-comparison of techniques for particle
viscosity measurements "**

by

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Time: 3:00PM – 4:00PM

Venue: E11 – 1035

Abstract

Viscosity of secondary organic aerosol (SOA) particles is important because it influences the phase state, hygroscopic growth and heterogeneous chemistry of SOA particles but remains poorly characterized. To investigate the effect of hydroxyl functional group on SOA viscosity, in this work, the viscosity of erythritol (i.e., 1,2,3,4-butanetetrol) – water particles was measured as a function of water activity using the bead-mobility, aerosol optical tweezer and rectangular fluorescence recovery after photobleaching (rFRAP) techniques. The viscosity of pure erythritol was determined by extrapolating the experimental data to zero water activity. By combining with literature data, the increase in viscosity from the addition of one hydroxyl functional group to a linear C4 backbone was estimated. Furthermore, experimental results show that multiple viscosity measurement techniques give viscosities in reasonable agreement if the experimental uncertainties are considered.

Biography

Dr. Yangxi Chu is currently a postdoctoral fellow at School of Energy and Environment, City University of Hong Kong. He received his PhD at The Hong Kong University of Science and Technology (HKUST) in 2017 and BEng at University of Science and Technology of China (USTC) in 2013.

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