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Viscosity and diffusion rate within secondary organic aerosols

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To improve predictions of the size distribution, mass, and heterogeneous kinetics of organic aerosol particles in the atmosphere, knowledge of the viscosities and diffusion rates in organic aerosols is required. Using a bead-mobility technique and a poke-flow technique combined with fluid simulations, we have quantified the relative humidity-dependent viscosities of secondary organic aerosols. Stokes-Einstein equation is then used to convert the viscosities into equivalent diffusion rates of large organic molecules within secondary organic aerosols. Results and implications from the studies will be presented.