

Supplementary Information

Title: liquid-liquid phase separation in particles containing organics mixed with ammonium sulfate, ammonium bisulfate, ammonium nitrate or sodium chloride

Yuan You, Lindsay Renbaum-Wolff, and Allan K. Bertram¹

Department of Chemistry, University of British Columbia, 2036 Main Mall, Vancouver, BC, V6T 1Z1, Canada

¹To whom correspondence should be addressed:

Email: bertram@chem.ubc.ca

Supporting Movies

Movie S1. A movie of a particle (OIR = 2.0 and diameter = 28.0 μm) consisting of 2-methylglutaric acid and ammonium sulfate. Images were recorded as the RH was decreased from 79% to 72% at a temperature of 290 ± 1 K. The ramp rate was approximately 0.6% RH min^{-1} . For the particle shown in this movie, liquid-liquid phase separation occurred at an RH $75 \pm 2.5\%$. A rough indication of the RH during the movie has been included.

Movie S2. A movie of a particle (OIR = 2.0 and diameter = 32.3 μm) consisting of 2-methylglutaric acid and ammonium bisulfate. Images were recorded as the RH was decreased from 70% to 60% at a temperature of 290 ± 1 K. The ramp rate was approximately 0.6% RH min^{-1} . For the particle shown in this movie, liquid-liquid phase separation occurred at an RH $65.5 \pm 2.5\%$. A rough indication of the RH during the movie has been included.

Movie S3. A movie of a particle (OIR = 2.1 and diameter = 33.6 μm) consisting of 2-methylglutaric acid and sodium chloride. Images were recorded as the RH was decreased from 65% to 55% at a temperature of 290 ± 1 K. The ramp rate was approximately 0.6% RH min^{-1} . For the particle shown in this movie, liquid-liquid phase separation occurred at an RH $60.2 \pm 2.5\%$. A rough indication of the RH during the movie has been included.

Movie S4. A movie of a particle (OIR = 2.0 and diameter = 32.3 μm) consisting of 2-methylglutaric acid and ammonium nitrate. Images were recorded as the RH was decreased

from 43% to 27% at a temperature of 290 ± 1 K. The ramp rate was approximately $0.6\% \text{ RH min}^{-1}$. For the particle shown in this movie, liquid-liquid phase separation occurred at an RH $35.3 \pm 2.5\%$. A rough indication of the RH during the movie has been included.