

Interactive comment on “Liquid–liquid phase separation in particles containing organics mixed with ammonium sulfate, ammonium bisulfate, ammonium nitrate or sodium chloride” by Y. You et al.

Anonymous Referee #1

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So far, liquid-liquid phase separation (LLPS) in mixed organic-inorganic aerosol particles has mostly been studied for systems with ammonium sulfate as the inorganic component. However, ambient aerosols also contain other salts. This paper investigates now mixtures with ammonium bisulfate, ammonium nitrate and sodium chloride as the inorganic component and thus covers the most common inorganic salt compositions found in tropospheric aerosols. It relates the occurrence of LLPS to O:C, which has already been established as a good predictor of LLPS for systems with ammonium sulfate as the inorganic component. This is a relevant study to better constrain the

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particle compositions for which LLPS is present. The paper is well written and the results are clearly presented. There is one point that should be added to the discussion of LLPS of the investigated systems, namely, which of the investigated organic substances show LLPS when mixed with water even in the absence of an inorganic salt, i.e. for an OIR of infinity. This would help to better judge the salting-out effects of the investigated salts.

As a minor technical point: the authors should try to improve the contrast of the optical images shown in Fig. 1.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 20081, 2013.