

Figure S1. Histogram of particles from stages B and C from the 1:1 ammonium sulfate/sucrose system. The OVF of particles with regions exceeding an Optical Density (OD) of 1.5 are shown in red. The black vertical line is the OVF expected from the bulk solution.

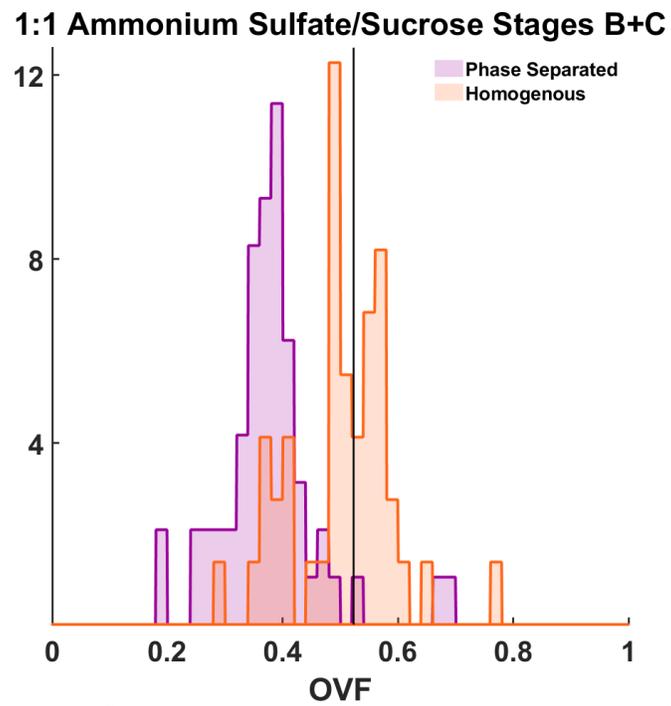


Figure S2. Overlapping histograms of both phase separated and homogenous particles seen in stages B and C for the 1:1 ammonium sulfate/sucrose system. The black vertical line is the OVF expected from the bulk solution.

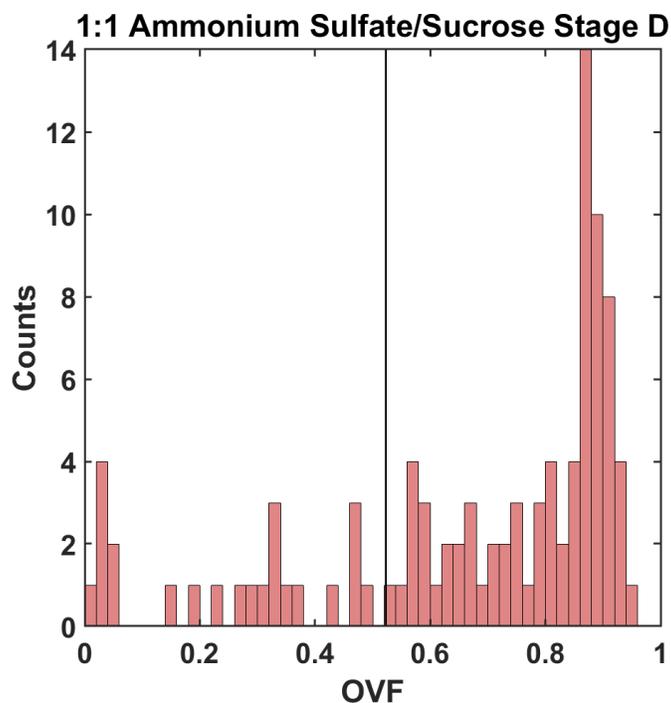


Figure S3. Histogram of OVFs for only stage D particles for the 1:1 ammonium sulfate/sucrose system showing that the extreme spread originates mainly from these particles. The black vertical line is the OVF expected from the bulk solution.

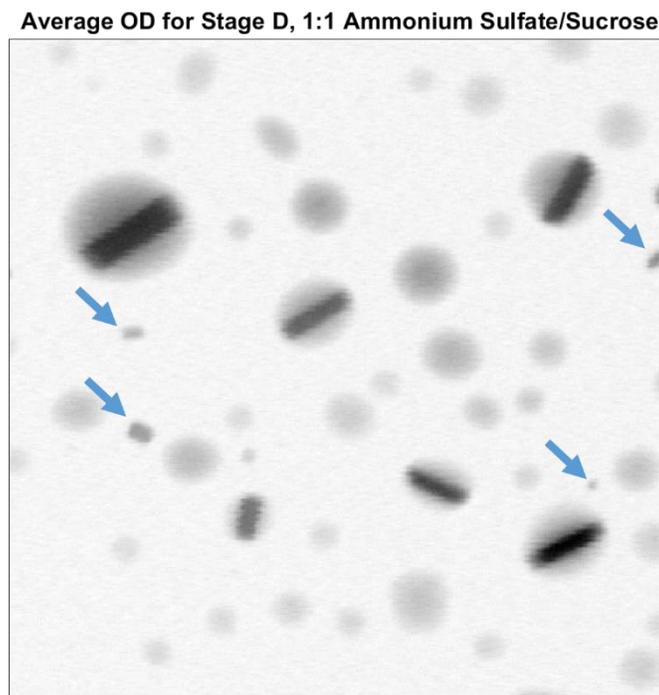


Figure S4. Average Optical Density (OD) micrograph of 4 carbon k-edge energies (278, 285.4, 288.6, and 320 eV) for an example field of view from stage D of the 1:1 ammonium sulfate/sucrose system. The average OD image provides good contrast for visualizing inorganic and organic particles. Blue arrows point to some irregularly shaped particles which suggests fragments from particle shattering.