



## **The Phase Transition of Internally Mixed Ammonium Sulfate-Malonic Acid Aerosols Determined Using Attenuated Total Reflectance Infrared Spectroscopy**

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The phase transition of internally mixed ammonium sulfate with malonic acid aerosols is studied using attenuated total reflectance Fourier Transform infrared spectroscopy (ATR-FT-IR). The deliquescence relative humidity (DRH) of the mixture aerosols is determined based on the significant intensity variation of specific absorption bands as RH varies. In addition to the intensity variation of water absorption, the IR absorption of the solutes also changes as the physical transition happens. In this study, we observed that the DRH for a given composition could vary significantly based on the selected absorption bands applied for DRH determination. The DRH as a function of the mixing ratio of ammonium sulfate to malonic acid is summarized and compared with other studies to investigate the possible discrepancies between different studies.