

## ***Interactive comment on “Investigation of the hygroscopic properties of $\text{Ca}(\text{NO}_3)_2$ and internally mixed $\text{Ca}(\text{NO}_3)_2/\text{CaCO}_3$ particles by micro-Raman spectrometry” by Y. J. Liu et al.***

### **Anonymous Referee #1**

Received and published: 28 July 2008

This paper describes hygroscopic behavior of  $\text{Ca}(\text{NO}_3)_2$  and  $\text{Ca}(\text{NO}_3)_2/\text{CaCO}_3$  particles using micro-Raman spectroscopy. Although the paper highlights the usefulness of this technique in determining particle water content and structural changes upon phase transition, a few minor revisions/clarifications are suggested:

1. The microscopic images in Figures 5 and 7 have very poor resolution. It would be helpful if the authors specified how these images were collected (i.e. type of instrument used).
2. It would be helpful if the authors did not refer to the phase transition of  $\text{Ca}(\text{NO}_3)_2$  between 11% and 7% RH as efflorescence. In the most technical definition, efflores-

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cence refers to the crystallization (i.e. complete drying) of a particle, which the authors confirm does not happen in this case. The phrase "dehydration process" seems to be more appropriate for this circumstance.

3. The authors cite quite a few peak positions in the text, and refer to sharp shifts and changes in FWHM of the Raman spectra. It would be very helpful for the reader if a sample of these Raman spectra were shown.

4. The absence of a hysteresis effect between deliquescence and efflorescence processes is a fairly unusual result. Further discussion on the chemical reasoning behind this result would be appreciated.

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 10597, 2008.

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