

Home

Online Library ACP

- Recent Final Revised Papers
- [Volumes and Issues](#)
- Special Issues
- Library Search
- Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact  
Factor  
4.927

ISI  
indexed



[Volumes and Issues](#) [Contents of Issue 20](#)

Atmos. Chem. Phys., 9, 7679-7690, 2009

www.atmos-chem-phys.net/9/7679/2009/

© Author(s) 2009. This work is distributed under the Creative Commons Attribution 3.0 License.

## Gas phase acetic acid and its qualitative effects on snow crystal morphology and the quasi-liquid layer

T. N. Knepp<sup>1</sup>, T. L. Renkens<sup>1</sup>, and P. B. Shepson<sup>1,2,3</sup>

<sup>1</sup>Department of Chemistry, Purdue University, 560 Oval Dr., West Lafayette, IN 47907, USA

<sup>2</sup>Department of Earth and Atmospheric Science, Purdue University, 550 Stadium Mall Dr., West Lafayette, IN 47907, USA

<sup>3</sup>Purdue Climate Change Research Center, Purdue University, 503 Northwestern Ave., West Lafayette, IN 47907, USA

**Abstract.** A chamber was constructed within which snow crystals were grown on a string at various temperatures, relative humidities, and acetic acid gas phase mole fractions. The temperature, relative humidity, and acid mole fraction were measured for the first time at the point of crystal growth. Snow crystal morphological transition temperature shifts were recorded as a function of acid mole fraction, and interpreted according to the calculated acid concentration in the crystal's quasi-liquid layer, which is believed to have increased in thickness as a function of acid mole fraction, thereby affecting the crystal's morphology consistent with the hypothesis of Kuroda and Lacmann. Deficiencies in the understanding of the quasi-liquid layer and its role in determining snow crystal morphology are briefly discussed.

[Final Revised Paper](#) (PDF, 1177 KB) [Discussion Paper](#) (ACPD)

Citation: Knepp, T. N., Renkens, T. L., and Shepson, P. B.: Gas phase acetic acid and its qualitative effects on snow crystal morphology and the quasi-liquid layer, *Atmos. Chem. Phys.*, 9, 7679-7690, 2009. [Bibtex](#) [EndNote](#) [Reference Manager](#)

Copernicus Publications  
The Innovative Open Access Publisher

Search ACP

Library Search

Author Search

News

- New Alert Service available
- Sister Journals AMT & GMD
- Financial Support for Authors
- Public Relations & Background Information

Recent Papers

01 | ACP, 09 Nov 2009:  
Exploiting the weekly cycle as observed over Europe to analyse aerosol indirect effects in two climate models

02 | ACP, 06 Nov 2009:  
Extreme Saharan dust event over the southern Iberian Peninsula in september 2007: active and passive remote sensing from surface and satellite

03 | ACP, 06 Nov 2009:  
Direct estimates of emissions from the megacity of Lagos