

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
4.865

ISI
indexed



▣ [Volumes and Issues](#) ▣ [Contents of Issue 12](#)

Atmos. Chem. Phys., 5, 3423-3432, 2005

www.atmos-chem-phys.net/5/3423/2005/

© Author(s) 2005. This work is licensed under a Creative Commons License.

Kinetics and mechanism of the uptake of N₂O₅ on mineral dust at 298 K

S. Seisel¹, C. Börensen², R. Vogt², and R. Zellner¹

¹Institute for Physical and Theoretical Chemistry, University of Duisburg-Essen, Germany

²Ford Forschungszentrum Aachen, Aachen, Germany

Abstract. The heterogeneous reaction of N₂O₅ with mineral (Saharan) dust has been studied at T=298 K using a combination of Knudsen and DRIFTS cells for kinetic and product investigations, respectively. The initial uptake coefficient has been determined to be $\gamma=(8.0\pm 0.3)\cdot 10^{-2}$. This uptake slowly saturates into a steady state uptake of $\gamma=(1.3\pm 0.3)\cdot 10^{-2}$ suggesting that reaction of N₂O₅ with the mineral dust surface and hydrolysis of N₂O₅ on the surface take place simultaneously. Both uptake coefficients have been calculated on the basis of the geometric (projected) surface area of the sample and must therefore be regarded as upper limits. In addition, the product investigations show that N₂O₅ is irreversibly taken up to form nitrate on the surface. Recent model calculations suggest that the uptake rates of N₂O₅ on Saharan dust which we measured may be large enough to influence the photo-oxidant budget of the atmosphere.

▣ [Final Revised Paper](#) (PDF, 361 KB) ▣ [Discussion Paper](#) (ACPD)

Citation: Seisel, S., Börensen, C., Vogt, R., and Zellner, R.: Kinetics and mechanism of the uptake of N₂O₅ on mineral dust at 298 K, Atmos. Chem. Phys., 5, 3423-3432, 2005. ▣ [Bibtex](#) ▣ [EndNote](#) ▣ [Reference Manager](#)

Search ACP

Library Search

Author Search

News

- ▣ [Sister Journals AMT & GMD](#)
- ▣ [Financial Support for Authors](#)
- ▣ [Journal Impact Factor](#)
- ▣ [Public Relations & Background Information](#)

Recent Papers

01 | ACP, 19 Feb 2009:
Relating observations of contrail persistence to numerical weather analysis output

02 | ACP, 19 Feb 2009:
Increasing ozone in marine boundary layer inflow at the west coasts of North America and Europe

03 | ACP, 19 Feb 2009:
Influence of non-ideality on condensation to aerosol

04 | ACP, 19 Feb 2009:
Uncertainty in global CCN