



## **Study on the ice nucleation activity of fungal spores (Ascomycota and Basidiomycota)**

B. G. Pummer (1), L. Atanasova (2), H. Bauer (3), J. Bernardi (4), I. S. Druzhinina (2), and H. Grothe (1)

(1) Vienna University of Technology, Institute of Material Chemistry, Austria (bernhard.pummer@imc.tuwien.ac.at), (2) Vienna University of Technology, Institute of Chemical Engineering, Austria, (3) Vienna University of Technology, Institute of Chemical Technologies and Analytics, Austria, (4) Vienna University of Technology, Service Center for Electron Microscopy, Austria

Biogenic ice nucleation (IN) in the atmosphere is a topic of growing interest, as, according to IPCC, the impact of IN on global climate is crucial to perform reliable climate model calculations. About 20 years ago IN activity of a few lichen and *Fusarium* species [1,2] was reported, while all other investigated fungi were IN-negative. However, as the fungal kingdom is vast, many abundant species, especially the Basidiomycota (most mushrooms), were not tested before. Furthermore, the focus of the past studies was on the IN activity of the mycelium as a cryoprotective mechanism, and not on the airborne spores.

We carried out oil immersion measurements [3] with spores from 17 different fungal species of ecological, economical or sanitary importance. Most of these species have not been investigated before, like exponents of *Aspergillus*, *Trichoderma* and Agaricales (most mushrooms). Apart from *F. avenaceum*, spores of all measured species showed moderate or no IN activity, supporting the hypothesis that significant IN activity is a rather exclusive property of only a few species within the fungal kingdom.

[1] Kieft TL and Ruscetti T: J. Bacteriol. 172, 3519-3523, 1990.

[2] Pouleur S et al.: Appl. Environ. Microbiol., 58, 2960-2964, 1992.

[3] Marcolli C et al.: Atmos. Chem. Phys. 7, 5081-5091, 2007.