Abstract Submitted
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First Steps in Atmospheric Particle Formation: Nucleation of the Smallest Ice Snowflake[1] JOZEF LENGYEL, JURAJ FEDOR, JAROSLAV KOCISEK, VIKTORIYA POTERYA, ANDRIY PYSANENKO, MICHAL FARNIK, J. Heyrovsky Institute of Physical Chemistry, Academy of Science of the Czech Republic, MOLECULAR AND CLUSTER DYNAMICS TEAM — The study of atmospheric aerosols attracts a considerable attention because of its influence on atmospheric chemistry and climate. Perhaps the most famous example is the ozone hole where the polar stratospheric clouds play a key role in the ozone depletion process. The atmospheric cloud generation starts with the growing of small ice nanoparticles via uptake of molecules on water clusters. Therefore the cross-sections for uptake have been investigated. The measured cross sections of ice particles can be more than twice larger than the geometrical cross sections of these particles.[2] This can have significant consequences in modelling of growth ice nanoparticles. Subsequently, we have investigated the size-dependence of the measured cross-sections for water clusters. Here, the cross sections of water clusters depart from the theoretically predicted dependence and are considerably larger starting from the clusters of approximately 300 water molecules. We interpret this increase of cross section by the occurrence of highly irregular water cluster shapes, e.g. formation of the "nanosnowflakes".[3]

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[2]J. Lengyel et al. **J Chem Phys** 137, 2012, 034304
[3]J. Lengyel et al. **Phys Rev Lett** 112, 2014, 113401

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