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Editorial

Special Issue Editorial: Nanoparticles in the Atmosphere

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The aim of this Special Issue was to gain insight into the current knowledge on nanoparticles in the atmosphere, from laboratory and field measurements to theoretical and modelling studies of nanoparticles from various atmospheric environments. Nanoparticles have many unique properties compared to large particles or bulk material, e.g., they can be chemically very reactive (as catalysts), transformed easily (sintering) or act as seeds for vapor condensation (new particle formation in the atmosphere). Furthermore, they have adverse health effects because they can easily penetrate deep into lungs during inhalation.

This Special Issue consists of four articles related to small-scale combustion, urban aerosols and heterogeneous oxidation of semisolid particles. In the first article, Kangasniemi et al. present results from experimental and modelling studies on dispersion of traffic-related nanoparticles (1.3–4 nm) near a road. The results show that nanoparticle concentration near the road decreased more rapidly than the concentration of larger particles did, due to dilution and deposition. The second article by Manigrasso et al. offers valuable results of nanoparticle behavior in a street canyon at different heights and indoor respiratory doses. Their results indicate that the dose of nanoparticles is ~2.5-fold higher at street level than at 20 m height. Fine particle emissions from 10 different types of wood-fired sauna stoves were studies in the third article by Tissari et al. They concluded that each type of stove has individual performance and emissions; however, the overall design of sauna stoves nowadays is better than it was 10 years ago. In the final article, Fan and Goulay present results from the OH-initiated heterogeneous oxidation of semisolid saccharide particles based on flow tube experiments and diffusion–reaction kinetic modeling. The results suggest that bulk diffusivity has an important effect on chemical transformation of semisolid particles in the atmosphere.

Finally, I would like to thank all the authors for the hard work that they have done on writing articles and modifying them based on reviewers' comments, as well as the reviewers for constructive comments and the staff of the publisher for well-working cooperation.