Aerosol nucleation induced by a high energy particle beam - DTU Orbit (14/10/2019)

**Aerosol nucleation induced by a high energy particle beam**

We have studied sulfuric acid aerosol nucleation in an atmospheric pressure reaction chamber using a 580 MeV electron beam to ionize the volume of the reaction chamber. We find a clear contribution from ion-induced nucleation and consider this to be the first unambiguous observation of the ion-effect on aerosol nucleation using a particle beam under conditions that resemble the Earth's atmosphere. By comparison with ionization using a gamma source we further show that the nature of the ionizing particles is not important for the ion-induced component of the nucleation. This implies that inexpensive ionization sources - as opposed to expensive accelerator beams - can be used for investigations of ion-induced nucleation.

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