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Numerical study of nanoparticle formation in a free turbulent jet

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Abstract

© Published under licence by IOP Publishing Ltd.Di-ethyl-hexyl-sebacate (DEHS) aerosol nanoparticle formation in a free turbulent jet as a result of nucleation, condensation and coagulation is studied using fluid flow simulation and the method of moments under the assumption of lognormal particle size distribution. The case of high nucleation rates and the coagulation-controlled growth of particles is considered. The formed aerosol performance is jet is numerically investigated for the various nozzle diameters and two approximations of the saturation pressure dependence on the temperature. It is demonstrated that a higher polydispersity of the aerosol is obtained for smaller nozzle diameters.

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