



Engineering : Technology and Engineering, Mathematical and Computational Engineering Applications, Engineering Mathematics, Engineering Mechanics, Solid Mechanics

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## Droplets and Sprays: Simple Models of Complex Processes

Focuses on the recently developed simple models for spray formation and for the heating and evaporation of droplets Gives systematic mathematical description of the new models of the p.

This book acts as a guide to simple models that describe some of the complex fluid dynamics, heat/mass transfer and combustion processes in droplets and sprays. Attention is focused mainly on the use of classical hydrodynamics, and a combination of kinetic and hydrodynamic models, to analyse the heating and evaporation of mono- and multi-component droplets. The models were developed for cases when small and large numbers of components are present in droplets. Some of these models are used for the prediction of time to puffing/micro-explosion of composite water/fuel droplets — processes that are widely used in combustion devices to stimulate disintegration of relatively large droplets into smaller ones. The predictions of numerical codes based on these models are validated against experimental results where possible. In most of the models, droplets are assumed to be spherical; some preliminary results of the generalisation of these models to the case of non-spherical droplets, approximating them as spheroids, are presented.

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