

UNIVERSITÀ

DEGLI STUDI

Dipartimento di Ingegneria **DI BERGAMO** e Scienze Applicate



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> December 18th , 2023, 9:30-12:30, Room C302 December 19th, 2023, 9:30-11:30, Room C302

Heat and mass transfer in droplets



The image is reproduced from Fig. 1.1 of the book by S. Sazhin 'Droplets and Sprays: Simple Models of Complex Processes', Springer, 2022

ABSTRACT

The classical model (described by Abramzon and Sirignano), and the most recent developments in the modelling of heating and evaporation of mono- and multi-component droplets, will be presented, and the most important unsolved problems will be discussed. Basic principles of the Discrete Component Model and its applications, including those to biodiesel fuel and kerosene droplets, will be described. The main ideas of the Multi-dimensional Quasi-discrete Model and its applications to Diesel and gasoline fuel droplets will be described. Simple but practically important models of composite water/fuel droplet puffing and micro-explosions will be summarised. Basic principles of the kinetic and molecular dynamic (MD) models for droplet heating and evaporation and their application to automotive fuels will be described.



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December 19th , 2023, 11:30-12:30, Room C302

Simple models of complex processes: recent developments



ABSTRACT

New models for heating and evaporation of liquid films and suspended and sessile droplets will be described. The results of experimental and numerical investigation of heating and evaporation of an R114/R21 refrigerant mixture film falling over a vertical heated cylinder will be summarised. New advanced and simple two-dimensional (2D) models of sessile droplet heating/cooling and evaporation will be discussed. In contrast to the earlier developed one-dimensional (1D) model, based on the assumption that heat supplied from the supporting surface is homogeneously and instantaneously spread throughout the droplet, both new 2D





Webex Meeting Links:

Monday, December 18th 2023

Seminar Prof. Sazhin 18th Dec

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Tuesday, December 19th 2023

Seminar Prof. Sazhin, 19th Dec

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