UNIVERSITÀ DEGLI STUDI DI BERGAMO | Dipartimento di Ingegneria e Scienze Applicate

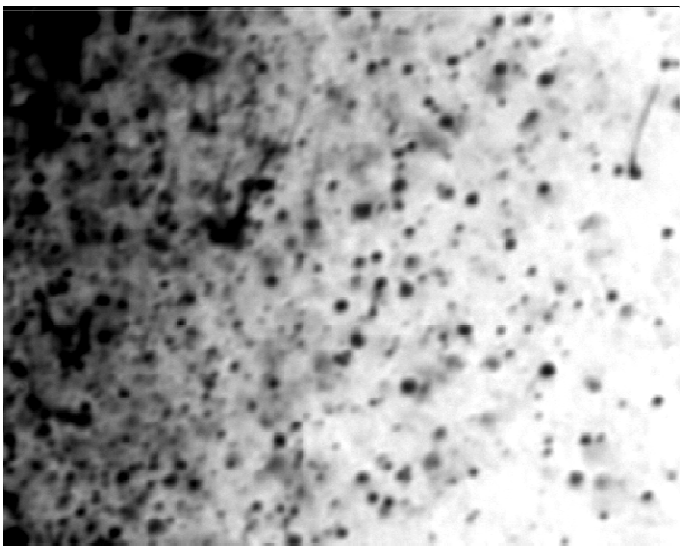
Prof. Sergei Sazhin

Advanced Engineering Centre, School of Computing, Engineering and Mathematics, University of Brighton, Brighton BN2 4GJ, UK. S.Sazhin@brighton.ac.uk

December 19th, 2019, 09:00-12:00, Room B103

December 20th, 2019, 09:00-11:00, Room B103

HEAT AND MASS TRANSFER IN DROPLETS



The image was provided by Professor C Crua (University of Brighton, UK)

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 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 discussed. Basic principles of the kinetic and molecular dynamic (MD) models for droplet heating and evaporation and their application to automotive fuels will be described. The following unsolved problems will be discussed: limitations of the Effective Thermal Conductivity/Effective Diffusivity (ETC/ED) model; contributions of the interaction between droplets; modelling of droplet heating and evaporation in near-, trans- and super-critical conditions; practically useful (for implementation within CFD codes) approximations of the kinetic effects.

Ref. Prof. G.E. Cossali, g.cossali@unibg.it