



**Mardi 2 décembre à 14 h 00**  
**INSTITUT DE MECANIQUE DES FLUIDES**  
**Amphithéâtre Nougaro - Allée du Pr. Camille Soula, Toulouse**

# Transport, mixing and agglomeration of small particles in turbulent flows

**Michael W Reeks**

School of Mechanical & Systems Engineering - University of Newcastle, UK

This seminar is about methods and approaches that have been used to simulate and model the transport, mixing and agglomeration of small particles in a flowing turbulent gas. The transported particles because of their inertia are assumed not to follow the motion of the large scales of the turbulence and or the motion of the small dissipating scales of the turbulence. I will show how both these behaviours can be represented by a PDF approach analogous to that used in Classical Kinetic Theory. For large scale dispersion the focus will be on transport in simple generic flows like statistically stationary homogeneous isotropic turbulence and simple shear flows. Special consideration will be given to the transport and deposition of particles in turbulent boundary layers. For small scale transport the focus will be on how the the small scales of turbulence together with the particle inertial response enhances collision processes like particle agglomeration. In this case the importance of segregation and the formation of caustics, singularities and random uncorrelated motion will be highlighted and discussed.

**Keywords:** *inertial particles, turbulence, pdf approach, segregation, dispersion*

**contact : [sig\\_communication@imft.fr](mailto:sig_communication@imft.fr)**