

# Self-propulsion of active symmetric and asymmetric nanomotors

*Pierre de Buyl, University of Brussels, Belgium*

Micro- to nano-scale motors of various types have been constructed and studied experimentally. These motors represent a building block for the construction of devices that need to convert chemical energy into mechanical motion. In this talk, we present mesoscale models that combine molecular dynamics, hydrodynamics (via multiparticle collision dynamics) and chemical activity. The models allow to study the self-propulsion by phoretic mechanism. We will consider (i) the Janus particle (an asymmetric colloid) with dissociation and exothermic reactions and (ii) an active sphere for which no direction for motion is defined a priori but that can undergo self-propulsion when a symmetry breaking distorts the concentration profile and sustains ballistic motion.

**Tuesday, July 16<sup>th</sup>, 2013  
14:00 (Room 1.079)**

**Institute for Computational Physics, Allmandring 3**