



**Wolfson Department of Chemical Engineering Special Seminar  
Meeting room (3<sup>rd</sup> floor), Wolfson Department of Chemical Engineering,  
Sunday, November 26<sup>th</sup> at 9:30am**

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**Beyond Stokes' law --- motion of a sphere in a viscous fluid**

I will examine two cases of a sphere moving in a viscous fluid at low Reynolds number, showing pronounced qualitative dynamics that conventional Stokes flow fails to describe. In one case we will see that rotation and translation could be coupled even for a geometrically spherical particle. In the second case, a particle falling in a viscous fluid near a wall will start to move away from the wall. In both cases, the seemingly mysterious effects come from coupling between hydrodynamics and an additional field. In the first --- heat; in the second --- elasticity.

I outline general theoretical principles that allow extracting the most significant features of the particle dynamics by bypassing the construction of the detailed velocity and pressure fields.

Refreshments will be served at 9:15am