

**Rotation of Non-Spherical Particles in Shear and Strain  
with Application to Paper and Other Biomaterials**

**Prof. Fredrik Lundell**

**Associate Professor, Department of Mechanics,  
Royal Institute of Technology (KTH), Sweden**

**日時: 2012年11月12日(月) 16:00-17:20**

**会場: 東京大学工学部2号館3F 232号講義室**

**要旨**

The properties of a paper and other fibre based materials depend on the spatial and orientational distribution of the fibres. In a paper machine, the lowest concentration is as low as 1%. Consequently, 100kg of water is pumped around in the machine for every kg of the final product. An overview of the papermaking process will be given, focusing on the fluid mechanical aspects. Rotation of non-spherical particles in different flows will then be described theoretically/numerically and a number of experiments where different aspects are highlighted will be presented. In particular, new results on the effects of particle and fluid inertia will be presented. It turns out that the combinations of these two opens up a parameter space with rich dynamics, with multiple solutions and hysteresis. For triaxial particles, one can even get chaotic particle motion!



主催: 東京大学グローバルCOEプログラム「機械システム・イノベーション国際拠点」  
本件連絡先: 東京大学大学院工学系研究科機械工学専攻 准教授 塩見 淳一郎  
E-mail: [shiomi@photon.t.u-tokyo.ac.jp](mailto:shiomi@photon.t.u-tokyo.ac.jp) Phone: 03-5841-6283  
GCOE事務局 E-mail: [gmsi-office@mechasys.jp](mailto:gmsi-office@mechasys.jp) Phone: 03-5841-7437