**EPSRC supported EngD project: Using Tribological Principles to Optimise Grinding Process for the Manufacturing of MFC**

Dr Zhenyu Jason Zhang and Prof. Stuart Blackburn

School of Chemical Engineering, University of Birmingham

Tax free bursary of £19,900 p.a. plus fees paid

During the manufacturing process of Micro-Fibrillated Cellulose (MFC), grinding media (beads of mm/cm diameter) are used to break down pulp into MFC. We aim to establish a thorough understanding of the frictional characteristics between grinding media as a function of the formulation, so as to optimise the manufacturing process of MFC. The potential benefits are the following:

* reduced consumption of grinding media
* improved energy efficiency for the grinding process
* enhanced product properties

Due to the complex nature of the formulation, we plan to break down the system and investigate a series of variables. The learning outcome will enable our industrial to optimise the current manufacturing process of MFC. This multi-disciplinary project is part of an extensive collaboration between FiberLean and UoB where multiple doctoral researchers will work closely.

Laboratory skills to be developed include essential chemistry lab practice, scanning probe microscopy (SPM), micro-manipulation rig, micro-tribometer, and contact angle goniometer. Additionally, summer school and conferences organized specifically for the EngD students will be an excellent opportunity to exchange research experience. The project is suitable to a chemist who wishes to develop industrial experience, or a chemical engineer to establish knowledge in colloids and interface.

To be eligible for EPSRC funding candidates must have at least a 2(1) in an Engineering or Scientific discipline or a 2(2) plus MSc. Please email your c.v. to [r.w.greenwood@bham.ac.uk](mailto:r.w.greenwood@bham.ac.uk). For more details on the Engineering Doctorate scheme please visit <http://www.birmingham.ac.uk/schools/chemical-engineering/postgraduate/eng-d/index.aspx>