United Kingdom

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Dr Karen Edler (Bath University): gelation of partially oxidised cellulose nanofibres to thicken aqueous suspensions, film & emulsion formation using partially oxidised cellulose with surfactants, salts. Structural characterisation of these materials (***SAXS, SANS, reflectivity, AFM, electron microscopy etc.***).

Dr Mike Jarvis (Glasgow University): High-temperature acid and alkaline treatment of biomass. Characterisation of celluloses in situ and after extraction: solid-state ***NMR and vibrational spectroscopy, wide-angle and small-angle X-ray and neutron scattering***. Characterisation of cellulosic materials under mechanical stress: above methods except NMR. Modelling of tensile moduli and fracture properties of natural and artificial cellulose-based materials.

Dr Sameer Rahatekar (Bristol University): fibre spinning of high performance as well as multifunctional regenerated cellulose fibres using ionic liquids as benign solvents. Carry out ***wet spinning of cellulose*** as well as electrically conducting cellulose and carbon nanotube nano composite fibres, shear and extensional rheological characterisation of cellulose fibre spinning dope.

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Dr Koonyang Lee (UCL): Design and fabrication of renewable natural fibre-reinforced, nanocellulose reinforced hierarchical composites. Applications of nanocellulose (bacterial cellulose or nanofibrillated cellulose) reinforced polymer composites for structural applications. Surface and interface engineering to enhance cellulose fibre-polymer matrix interface. Surface and interface characteristics of (nano)cellulose. Nanocellulose as emulsifiers for Pickering emulsions.

Professor Mizi Fan (Brunel): two Research Centres specifically related to this topic: ***Nanocellulose and Biocomposites Research Centre (18 researchers and academics), Grow2Build European Centre of Excellence (6 researchers and academics plus 12 members from European institutes)*** Nanocellulose fabrication pilot production line, and fibre/yarn formulation and composite production line. Advanced equipment specifically for nanocellulose, characterisation in addition to general microscopes, Instron facilities.

Dr Kerry Kirwan (Warwick): Industrial engagement in nanocellulose. Co-ordination of joint activities with US.

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Dr Martin Ansell (University of Bath) has a long-term record of research on cellulosic materials including wood, panel products and natural fibre composites. Currently participating in the ***EU-FP7: ECO-SEE programme (Eco-innovative, Safe and Energy Efficient wall panels and materials for a healthier indoor environment)*** where wood fibre panel products (MDF and chipboard) and cellulose fibre insulation products are under evaluation in conjunction with photo-catalytic nano-coatings.

Dr Tim Foster (Nottingham) is involved in the ***European Polysaccharide Network of Excellence*** and have just completed a ***Marie Curie ITN entitled "Shaping and Transformation in the Engineering of Polysaccharides"***. Main focus is the manipulation of cellulose functionality through chemical and thermo-mechanical processes, investigating the cellulose functionality, also in admixture with other polysaccharides.

Professor Tom Welton (Imperial) Biomass deconstruction and cellulose processing with ionic liquids. Using a detailed knowledge of solvent-solute interactions in ionic liquids we design processes for both chemical transformation and changing material morphology. ***Large UK funded programme (EPSRC) for conversion of biomass using ionic liquids.***

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Professor Steve Eichhorn (Exeter) Mechanical and physical properties characterisation of nanocellulose fibres. Small lab-scale production facilities for nanocellulose. Interaction of nanocellulose fibres with cells. Raman spectroscopy and stress transfer analysis of nanocellulose fibres and composites. Structural colour characterisation of cellulose nanostructures. Biophotonics. Production of cellulose nanofibres using electrospinning. Conversion of biomass to carbon fibres. ***FP7 funded programme on production of carbon fibres using some cellulose nanostructures.***

Professor Rob English (Napier) rheometry of cellulose 'dopes'. Well equipped rheology lab - rotational, capillary and capillary break-up and capabilities for looking at anything from very low viscosity fluids to solids, plus apparatus for high pressures and temperatures. Considerable background in extensional rheometry of complex and polymeric fluids in both free surface and confined flows with an obvious relevance to fibre spinning processes.

Capacity – FP1205

Biomass processing
- Atmospheric refining
- Pressurized refining
- Milling
- Fractionation – dry and wet
- Chemical synthasis
- Critical CO_2

Manufacture
- Composites
- Polymer processing
- Film manufacture
- Chemical synthesis

Analysis
- Chemical (NMR FTIR etc)
- Thermal (TGA DSC DMTA)
- Mechanical (tension compression etc)
- Contact angle, colour and transparency

All processing and manufacturing on both LAB and ***PILOT SCALE***