



The Polymer Centre is an integral part of the four-University Polymer IRC, bringing together Bradford, Durham, Leeds and Sheffield to offer a globally significant pool of expertise in polymer science and technology

The Polymer Centre  
Dainton Building  
The University of Sheffield  
Sheffield  
S3 7HF

T: 0114 222 9537  
F: 0114 222 9389  
E: [polymers@sheffield.ac.uk](mailto:polymers@sheffield.ac.uk)

[www.polymercentre.org.uk](http://www.polymercentre.org.uk)

**Whatever you want to  
do with polymers  
we can probably do it...**



**The Polymer Centre**

at the University of Sheffield

**Directory of Members**



The  
University  
Of  
Sheffield.



The  
University  
Of  
Sheffield.

**Prof. Steve Armes**

Department of Chemistry

Synthesis of vinyl polymer-silica colloidal nanocomposites, microgels, stimulus-responsive gelators and conducting polymer particles. Synthesis of controlled-structure water-soluble polymers, biocompatible block copolymers, block copolymer micelles, shell cross-linked micelles and latex-based particulate emulsifiers. Synthetic polymer chemistry, with a strong emphasis on colloidal forms of polymers. Development of synthetic methodology in the area of living radical polymerisation.

**E-mail:** s.p.ames@sheffield.ac.uk

**Telephone:** +44 114 22 29342

**Dr. Giuseppe Battaglia**

Department of Engineering Materials

Self assembled membranes and structures for drug delivery systems and tissue engineering scaffolds. Self organisation of polymer molecules to give useful micro and nano scale structures.

Phase behaviour of amphiphilic polymers in self assembled membranes. These membranes are more robust than those formed by biological phospholipids.

**E-mail:** G.Battaglia@sheffield.ac.uk

**Telephone:** +44 114 22 25962

**Dr. Malcolm Butler**

General Manager for the Polymer Centre, developing collaborative links between academia and industry. This is achieved through a programme of activities encompassing: contract research, consultancy and testing services; pure and applied research; training and education courses; commercial exploitation; demonstrator projects; industrial seminars; outreach activities; marketing and communication; and research and training partnerships.

**E-mail:** m.a.butler@sheffield.ac.uk

**Telephone:** +44 114 22 29537

**Prof. Rob Dwyer-Joyce**

Department of Mechanical Engineering

Tribology - Wear, Friction & Lubrication.

Monitoring and evaluating tribology (wear, friction and lubrication) between novel and traditional materials used in manufacturing today.

**E-mail:** r.dwyer-joyce@sheffield.ac.uk

**Telephone:** +44 114 22 27736

**Dr. Patrick Fairclough**

Department of Chemistry

Physical Chemistry of Macromolecular Systems. Wide range of techniques and methodologies for the characterisation of macromolecular systems ranging across the entire structure-property scale. Wide range of IR and Raman facilities, often used in conjunction with structural methods. This use of simultaneous techniques is a strong thread running through much of the research. High throughput screening (HTS) based around acoustic wave sensors. HTS systems developed to study gas permeability via mass uptake for gas mixtures, including humidity, in polymers

**E-mail:** p.fairclough@sheffield.ac.uk

**Telephone:** +44 114 22 29411

**Dr. Christine Fernyhough**

Department of Chemistry

Anionic polymerisation of polymers with controlled architectures including combs, stars, and diblock copolymers. Synthesis of near-monodisperse polymers with specific molecular mass and composition for determining structure-property relationships in a range of applications from packaging to biomaterials.

**E-mail:** c.m.fernyhough@sheffield.ac.uk

**Telephone:** +44 114 22 29415

**Prof. Geof Tomlinson**

Department of Mechanical Engineering

Vibration Damping using Polymers. Characterisation of materials in terms of their damping characteristics. Parameters derived are then applied in finite element models to estimate the characteristics of the material in service. The work is heavily applied; materials passing test criteria are subsequently incorporated into engine and other test beds in industry, prior to production.

**E-mail:** g.tomlinson@sheffield.ac.uk

**Telephone:** +44 114 22 27705

**Dr. Lance Twyman**

Department of Chemistry

Dendrimers and Hyperbranched Polymers. Dendrimers with hydrophilic surfaces & hydrophobic interiors, allowing water insoluble materials to be carried in aqueous solution for applications such as drug delivery.

**E-mail:** l.j.twyman@sheffield.ac.uk

**Telephone:** +44 114 22 29560

**Prof. Goran Ungar**

Department of Engineering Materials

Supramolecular Structures & Polymer Crystallization. Research concerns the way that large molecules & polymers self order into supramolecular structures. By selecting molecular architectures & functionality (e.g. dendrimers) a range of shapes can be formed, including cylinders, spheres, wedges & ribbons.

**E-mail:** g.ungar@sheffield.ac.uk

**Telephone:** +44 114 22 25457

**Prof. Ric Van Noort**

School of Clinical Dentistry

Structural Integrity of the Restored Tooth. There is a wide range of material used in restorative dentistry, an extremely active area for new polymeric materials. Work relates to the performance of these new materials, how they fail, and how to produce better materials for dentistry.

**E-mail:** r.vannoort@sheffield.ac.uk

**Telephone:** +44 114 271 7932

**Dr Xiangbing Zeng**

Department of Engineering Materials

Scattering Methods for Nanoscale Structures. Study of 1-d, 2-d, 3-d ordered macromolecular and supramolecular nano-structures (on the scale 1-100nm). The main methods used are small angle x-ray & neutron scattering (SAXS & SANS).

**E-mail:** x.zeng@sheffield.ac.uk

**Telephone:** +44 114 22 25967

**Dr. Jem Rongong**

Department of Mechanical Engineering

Vibration damping using Polymers. Characterisation of materials in terms of their damping characteristics. Parameters derived are then applied in finite element models to estimate the characteristics of the material in service. The work is heavily applied; materials passing test criteria are subsequently incorporated into engine and other test beds in industry, prior to production.

**E-mail:** [j.a.rongong@sheffield.ac.uk](mailto:j.a.rongong@sheffield.ac.uk)

**Telephone:** +44 114 22 27845

**Prof. Tony Ryan**

Department of Chemistry

Polymer, Structures, Properties and Processing. Methods include scattering (x-rays, light, neutrons), x-ray & neutron diffraction, rheology, calorimetry, microscopy & spectroscopy. Following structural changes in real time, as polymers are processed, synthesised, or react to changes in their environment. Work involves building processes into analytical techniques or building new techniques to follow development of structure.

**E-mail:** [tony.ryan@sheffield.ac.uk](mailto:tony.ryan@sheffield.ac.uk)

**Telephone:** +44 114 22 29409

**Prof. Costas Soutis**

Department of Mechanical Engineering

Intelligent materials & structures, non-destructive testing & evaluation, modelling & finite element analysis. Advanced Composites Structures. Mechanical properties & characterisation (static & fatigue); Failure analysis & fracture mechanics from micro to macro scale (inc. hydro-thermal effects); structural applications; low velocity impact, jointing & repair.

**E-mail:** [c.soutis@sheffield.ac.uk](mailto:c.soutis@sheffield.ac.uk)

**Telephone:** +44 114 22 27811 or 27718

**Prof. Peter Styring**

Department of Chemical and Process Engineering

Polymers & Soft Actuators in Chemical Engineering - Chemical Micro Reactors (CMRs). Design & synthesis of soft actuators for use as micro pumps & valves. Immobilisation of catalysts onto polymers to facilitate heterogeneous catalysis in Chemical Micro Reactors. Fabrication of Chemical Micro Reactors from polymeric materials.

**E-mail:** [p.styring@sheffield.ac.uk](mailto:p.styring@sheffield.ac.uk)

**Telephone:** +44 114 22 27571

**Dr. Liam Sutton**

Department of Chemistry

Polymer Technology Transfer. The Polymer Centre serves innovators in industry by matching their needs to the most appropriate expert(s) within the 40 polymer science and engineering research groups at the University of Sheffield and in determining what the most appropriate format for collaboration might be.

**E-mail:** [l.r.sutton@sheffield.ac.uk](mailto:l.r.sutton@sheffield.ac.uk)

**Telephone:** +44 114 22 29383

**Dr. Linda Swanson**

Department of Chemistry

Motion of Polymers in Solid and Solution Phases. Use of labelled polymers to establish links between molecular properties & mechanical & electrical behaviour. Use of phosphorescent labels attached to polymer backbones to monitor the dynamics of individual polymer chains in polymer solids & blends.

**E-mail:** [l.swanson@sheffield.ac.uk](mailto:l.swanson@sheffield.ac.uk)

**Telephone:** +44 114 22 29564

**Dr. Mark Geoghegan**

Department of Physics and Astronomy

Smart (responsive) materials. Structural properties of all-polymer electronic devices. Polymer adhesion. Soft nanotechnology: diffusion of single molecules. Polymers at Surfaces and Interfaces. Diffusion of polymers in heterogeneous media. Polymer gels and networks. Neutron reflectometry, scanning probe microscopies, confocal microscopy, fluorescence correlation spectroscopy, ion beam analysis.

**E-mail:** [mark.geoghegan@sheffield.ac.uk](mailto:mark.geoghegan@sheffield.ac.uk)

**Telephone:** +44 114 22 23544

**Prof. Ramin Golestanian**

Department of Physics and Astronomy and Department of Chemistry

Soft condensed matter. Casimir effect and dispersion forces. Elasticity of biopolymers. Polyelectrolytes. Wetting. Molecular machines.

**E-mail:** [r.golestanian@sheffield.ac.uk](mailto:r.golestanian@sheffield.ac.uk)

**Telephone:** +44 114 222 4273

**Dr. Martin Grell**

Department of Physics and Astronomy

Light Emitting Organic Materials.

**E-mail:** [m.grell@sheffield.ac.uk](mailto:m.grell@sheffield.ac.uk)

**Telephone:** +44 114 22 23598

**Prof. Paul Hatton**

School of Clinical Dentistry

Tissue Engineering and Polymer Biocompatibility. Tissue engineering, the ability to grow new cartilage & bone on polymer supports offers the potential for reconstructive surgery at the time of injury & avoidance of later surgery to replace joints. Facilities for assessing of polymers & other materials used in the healthcare industry.

**E-mail:** [p.v.hatton@sheffield.ac.uk](mailto:p.v.hatton@sheffield.ac.uk)

**Telephone:** +44 114 271 7938/7939

**Dr. John Haycock**

Department of Engineering Materials

Our interest is in how living cells and tissues interact with synthetic materials. We are currently using grafting techniques to attach short peptide messaging sequences onto modified polymer substrates. These peptide mediators can be used to specifically encourage any of a range of useful cell behaviours.

**E-mail:** [j.w.haycock@sheffield.ac.uk](mailto:j.w.haycock@sheffield.ac.uk)

**Telephone:** +44 114 22 25972

**Dr. Simon Hayes**

Department of Engineering Materials

Self-sensing and self-healing smart materials. Damage detection systems, cure monitoring systems and through-life monitoring of environmental and mechanical degradation. Nanomechanical testing, including nanoindentation for testing bulk polymers, thin polymer coatings and biological materials. Viscoelastic properties of very low modulus polymers (< 100 MPa) at a range of temperatures and frequencies

**E-mail:** [s.a.hayes@sheffield.ac.uk](mailto:s.a.hayes@sheffield.ac.uk)

**Telephone:** +44 114 22 25516

**Dr. Jamie Hobbs**

Department of Chemistry and Department of Physics and Astronomy

Non-destructive observations of processes in polymers in real time under a wide variety of environmental conditions. Development and application of scanning probe microscopy (SPM) techniques for the study of polymers. Studies on polymer crystallisation.

**E-mail:** [Jamie.hobbs@sheffield.ac.uk](mailto:Jamie.hobbs@sheffield.ac.uk)

**Telephone:** +44 114 22 29319

**Dr. Alma Hodzic**

Department of Mechanical Engineering

Development of link between fracture toughness and nano/micro properties of multiphase materials, composites. Development of novel nano-hardness techniques so as to be suitable for measurement of thin coatings and interface/interphase regions in composite and multiphase materials on a nano-level. Development of environmentally friendly materials, (green composites) to replace standard fossil fuel based plastics used in the packaging industry. Design and development of new generation of aerospace composites to resist high shear, compressive and bending stresses in large civil aircraft. Hybrid composites and nanocomposites.

**E-mail:** A.Hodzic@sheffield.ac.uk

**Telephone:** +44 114 22 27720

**Dr. Jonathan Howse**

Department of Chemical and Process Engineering

My research interests centre on the use and behaviour of polymers at the nanoscale. This soft nanotechnology has been employed in novel routes to the formation of polymer vesicles through self-assembly (a polymer analogue of a cell wall) as well the behaviour of polymer based nano-machines and nano-swimmers.

**E-mail:** J.R.Howse@sheffield.ac.uk

**Telephone:** +44 114 2227596

**Dr. Robert Howell**

Department of Mechanical Engineering

New instrumentation for measuring particle flows and high temperature gas flows feeds into the design of UAVs, micro rocket engines and micro wind turbines. Aerodynamics of turbines for use in aircraft propulsion and electricity generation.

**Email:** r.howell@sheffield.ac.uk

**Telephone:** +44(0)114 2227725

**Dr. Ahmed Iraqi**

Department of Chemistry

Electro- and Photo- Active Polymers including Polythiophenes, conjugated main-chain carbazole polymers and poly-acenes.

**E-mail:** a.iraqi@sheffield.ac.uk

**Telephone:** +44 114 22 29566

**Prof. Frank Jones**

Department of Engineering Materials

Polymers at Surfaces & Interfaces: Monitoring of nano-metre scale structure of interfaces between amorphous polymers by neutron reflectivity. Monitoring of phase separation kinetics in mixed polymers, polymer blends and bio-polymer mixtures. Kinetics of crystallisation and degree of crystallinity when compared to the bulk phase - control of adhesion, interfacial electronic properties of semi-conducting polymers.

**E-mail:** f.r.jones@sheffield.ac.uk

**Telephone:** +44 114 22 25477

**Prof. Richard Jones**

Department of Physics and Astronomy

Fibre Composites: Mechanics, Chemistry & Performance. Fibre-reinforced polymer matrix composites - fibre breakage and new ways of improving fibre-reinforced composites.

**E-mail:** r.a.l.jones@sheffield.ac.uk

**Telephone:** +44 114 22 24530

**Prof. Graham Leggett**

Department of Chemistry

Scanning Probe Microscopy. Scanning probe microscopy & atomic force microscopy to gain direct access to surface morphology and properties with nm spatial resolution. AFM for imaging polymer surfaces - tapping mode, phase imaging, Friction force microscopy, chemical force microscopy to probe surface properties.

**E-mail:** graham.leggett@sheffield.ac.uk

**Telephone:** +44 114 22 29556

**Prof. David Lidzey**

Department of Physics and Astronomy

Conjugated Polymer LED's (light-emitting diodes). Preparation of thin-films in and devices in dust-free conditions to create high quality structures and devices. Fabrication of high efficiency polymer LEDs in an inert atmosphere to prevent oxidation of their low work function metallic cathode. Spectroscopy suite allows measurements of the optical & electronic properties of conjugated polymers and organic thin films to be made. Near field scanning microscope allows material surfaces to be studied at length-scales of <100nm.

**E-mail:** d.g.lidzey@sheffield.ac.uk

**Telephone:** +44 114 22 23501

**Prof. Sheila MacNeil**

Department of Engineering Materials and Division of Clinical Sciences

Tissue Engineering. How polymers can serve as matrices for generating replacement human tissue. Current work is focused on generating a totally synthetic matrix for skin cells, to replace matrices derived from skin banks & animal sources.

**E-mail:** s.macneil@sheffield.ac.uk

**Telephone:** +44 114 22 25995

**Dr. Sally McArthur**

Department of Engineering Materials

Polymeric surface modification. Surface Analysis - XPS, ToF-SIMS and MALDI-MS. Biological interactions at interfaces. Surface Modification for microfluidic, array and sensor systems.

**E-mail:** s.l.mcarthur@sheffield.ac.uk

**Telephone:** +44 114 22 25513

**Dr. Tim Richardson**

Department of Physics and Astronomy

Applied Molecular Engineering. Building organised molecular multilayered architectures using a wide range of materials including monomeric & oligomeric porphyrins, calixarenes, rare earth containing complexes, polyethers & other polymers. Applications include toxic inorganic gas sensing, organic vapour detection, heat sensing, production of thiol-coated gold nanoparticles, ultra-thin film deposition of unmodified polymers.

**E-mail:** t.richardson@sheffield.ac.uk

**Telephone:** +44 114 22 28565

**Dr. Steve Rimmer**

Department of Chemistry

Synthesis of telechelic oligomers using techniques including living radical/ cationic polymerizations and by chain cleavage. Synthesis of new functional block and graft copolymers and highly branched polymers. Smart materials that act as drug delivery agents & protein purification phases, artificial antibodies that recognise analytes in aqueous solution & synthesis of functional polymers for tissue engineering. Much work is aimed at producing improved drug delivery and tissue engineering systems. Current work involves synthesis of polymers that can support catalysts & reagents. Synthesis and properties of functional and reactive polymers. Development of polymers with both chemical & biological functionality. The retention or addition of functionality within polymers forms the basis for many high value added materials; including those proposed in the fields of nano & biotechnology Polymer mass spectrometry - MALDI-TOF and electrospray mass spectrometry of polymer and oligomer systems.

**E-mail:** s.rimmer@sheffield.ac.uk

**Telephone:** +44 114 22 29565