

EXTENDED DEADLINE for abstracts and registration is 12th Feb 2024. Free to all participants.

Details of the MPG SEC Poster Showcase and Networking Event on Wednesday 21st February 2024 2.00 pm till 6.00 pm at Henry Royce Institute, University of Manchester are now available and, so far, feature posters covering the latest research in

- Mixed Plastic Waste,
- Plastic Pollution,
- Alternatives to transition metal catalysts,
- Alternatives to FRP's,
- An alternative to thermoresponsive polymer for drug delivery,
- Improving the quality of post-consumer recyclate,
- improving the design and production of underwater connectors
- A robust theoretical framework for heat transfer in fibrous materials.

Come along to support our young people working in your areas, network with them and meet up with possibly your future employees; at the same time demonstrating your business profile. There is no charge to participate.

More posters would also still be welcome. Prizes still available for top three!

Same registration details for all <https://forms.gle/BAvkxX16u1ByMU8x8>

Poster details as follows

- **Studies on the Effects of Mixed-Plastic Pyrolysis Char on the Mechanical Properties of Virgin and Recycled Polypropylene** which investigated the use of mixed-plastic pyrolysis char (MPWC) to reinforce virgin and recycled polypropylene. Notably, specific compositions exhibited superior impact strength, highlighting MPWC's potential for sustainable plastic waste valorization.
- **Plastic pollution** is an ever-growing environmental problem, which is now verging on becoming a planetary boundary threat. In this project, a methodology is being developed for the sampling and characterisation of plastics and their additives using thermal desorption gas chromatography mass spectrometry (TD-GC-MS). Preliminary results indicate an ability to differentiate plastics by polymer, and in some cases by item type or manufacturing location.
- **Simulation of heat transfer in fibrous materials** with this study focusing on the simulation of heat transfer in fibrous materials, grounded in a robust theoretical framework.
- **Frustrated Lewis Pairs (FLPs) pose as sustainable alternatives to transition metal catalysts** in a host of chemical processes such as reversible H₂ cleavage to facilitate metal-free hydrogenation of various substrates. Activation of other small molecules has enabled catalytic transformation into useful chemical feedstock. Polymeric FLPs sit at the intersection of functional polymer science

and main group catalysis. Their unique chemistry paired with a polymer scaffold creates recyclable catalysts and stimuli-responsive gel networks.

- **Fibre reinforced polymer composites (FRPs)** are used for a wide variety of applications, including wind turbine blades, boats and automobiles. However, the vast majority are synthesised using non-renewable feedstocks, and due to a lack of recycling technologies, large quantities of waste are created at their end-of-life. Alternatives that offer greater value at end-of-life are thermosets containing dynamic cross-links, which undergo reversible exchange reactions or are chemically depolymerisable.
- Poly(N-isopropylacrylamide (PNIPAM) is one of the most widely researched **thermoresponsive polymers**. We have previously shown that the PNIPAM nanogels can be used to produce in situ forming implants which provided long-acting drug delivery. An alternative to the PNIPAM, that has been proposed to offer fewer safety concerns is poly(oligoethylene glycol methyl ether methacrylate) (POEGMA), a methacrylate-based polymer.
- **Controlled polymer degradation through gas-mediated simulated recycling.** This project builds a diagnostic tool to quantify the quality of post-consumer recyclate as well as use gas mixtures to limit degradation.
- **Electrical Characterisation of PEEK Insulation used in Subsea Cable Connections.** Typically, these connectors employ a solid insulator in conjunction with mineral oil (MO). Despite the extensive research dedicated to exploring the compatibility of liquid and solid insulation materials, there is lack of literature addressing the electrical and solid insulation materials. Therefore, it is essential to investigate the breakdown phenomena of a PEEK/MO composite insulation system under AC stress, which could lead to a better reference for the design and production of underwater connectors