



Wolfson Department of Chemical Engineering Seminar

Monday, December 26th, 2023 at 13:30

Room 6

**Vitrimerization: A Novel Concept to Recycle Thermoset Waste
via Dynamic Chemistry**

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Vitrimerization is a newly developed concept to convert permanent crosslinked thermoset networks into vitrimer type dynamic networks via a simple, one-step method without depolymerization. Vitrimerization relies on designing a strategy to induce re-formability and healing in permanent chemically crosslinked polymer networks by using exchangeable chemical bonds that will lead to dynamic crosslinked networks. Key to the success of the strategy is establishing a process whereby exchange catalysts transform waste thermoset polymers into recyclable vitrimers. The vitrimerization approach is a low-cost, eco-friendly and scalable method that can be effectively implemented to address current challenges in recycling thermoset polymers. Moreover, the recycled thermosets can be used in combination with various nanofillers to manufacture nanocomposites with tailored properties. This simple and practical concept of recycling thermoset polymers without depolymerization provides a new strategy toward elimination of thermoset waste.