EPSRC supported EngD: Recycling and Reformulation of silicone elastomers: toward a circular economy of silicones

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Tax free bursary of £ 28,505 per annum plus fees paid.

Project Description:
Silicone elastomers are widely used as encapsulants, sealants and adhesives across multiple industries including defence, aerospace, energy and construction, yet they are environmentally problematic: four million tonnes are used globally each year, but less than 1% is currently chemically recycled. Most becomes waste, while production using virgin raw materials involves environmentally-damaging chemicals.

This project will develop circular routes that turn used silicone products into reliable, high-quality feedstocks for new polymers. The successful candidate will compare multiple different recycling methods across different silicone types and additives, determine how to recover useful material, and create more sustainable formulations from the recovered ingredients. They will test the quality of the products produced (as compared to virgin feedstocks), and how often they can be recycled. Having established the most promising processes, they will then explore how these can potentially be scaled-up from the laboratory towards kilogram-scale continuous production.

Environmental performance will be assessed throughout, including solvent use, energy demand, waste, equipment requirements and overall carbon footprint.

Funding Details:
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.

Open to UK nationals only due to funding restrictions.

For details on the Engineering Doctorate scheme visit the homepage.