Doctoral Landscape Award (DLA) project

Professor Roberto Rinaldi

October 2027 start

Utilisation of vegetable oils to produce sustainable chemicals and biofuels

This PhD project will tackle the oleochemical valorisation of vegetable oils and fats. The project will convert triglyceride feedstocks into fuels, biolubricants, surfactants, and platform chemicals through catalytic transformations, including hydrodeoxygenation, hydrotreatment, transesterification, and selective bond cleavage of fatty acid chains, with application to sustainable aviation fuel and other bio-based replacements for petroleum-derived products. You will design and characterise heterogeneous catalysts, elucidate reaction pathways and selectivity-controlling factors, and translate laboratory findings into processes compatible with existing refining infrastructure, working alongside our established programmes in lignocellulose biorefining and chemical recycling of plastics. The ultimate goal is to establish efficient, scalable routes that displace fossil-derived feedstocks with renewable oils across fuel, lubricant, and surfactant markets. We are particularly interested in candidates who enjoy tackling challenging chemical problems, conducting careful experimentation, and engaging in interdisciplinary research at the interface of chemistry and engineering.