Doctorate in Sciences and Technologies of Chemistry and Materials, year 2023

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Prof. **James H. Clark**

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CV

James Clark is widely recognized as internationally leading in his work on green and sustainable chemistry and its application to biorefineries and waste valorization. He has started and led some of the most important green and sustainable chemistry initiatives in the world in education, commercialization, networking and publishing. This includes establishing the world's largest green chemistry centre for research and education and being first editor of the world's no 1 journal in the area, Green Chemistry. His activities are worldwide and as well as holding a senior professorship at the University of York he holds Visiting Professorships in universities including Fudan and Sichuan in China. He has received honours and prizes reflecting the breadth of his activities including honorary doctorates at universities in Belgium, Germany and Sweden and prizes from the UK, Europe and the USA including the 2021 European award for green and sustainable chemistry. His current research on getting value from waste is not only exploited in numerous research projects in the UK and China but also through his spin-out companies including Addible (recycling waste plastics) and Starbons (bio-based materials from waste). His invention of the bio-based solvent Cyrene is being commercialized by the Circa Group including a new manufacturing plant in France. James has published over 600 articles (H-index 89) with recent publications in leading journals including Nature, Nat. Commun., Appl. Catal. B, Green Chem., and Angew. Chem.

Thursdsay, February 16th, 2023
Dipartimento di Chimica e Chimica Industriale, Via Dodecaneso 31
Aula Magna
ore 14.30
Opening Lecture

From Waste to Wealth using Green Chemistry

Abstract

Modern society is based on a linear economic model of extraction of virgin resources from the earth, processing to make articles, then use and disposal. We are transferring our precious resources into environmental burdens - landfills and uncontrolled pollution. This is not an intelligent use of resources and is not sustainable. We must move to a circular economic model whereby resources are never wasted, and we use the methods of Green Chemistry to process those resources, including recycling and with minimal environmental impact.

Today's wastes are tomorrows resources: these include inedible food supply chain by-products and forestry wastes, and metal-rich wastes including electronics. These are all chemically rich and to fully exploit this concept we need to show that Green Chemistry lives up to its promises. I will explore some green chemical technologies that can convert a wide variety of waste streams into valuable products including phytomining, low-temperature microwave processing, and the creation and use of green solvents.