

The waste-to-wealth concept: advanced solutions for a more sustainable future

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Abstract

Society urgently needs to cope with increasing energy demands, extensive pollution concerns and most importantly resource scarcity (water, food) already predicted for the years to come. In order to become a more sustainable society, scientists have to embrace such urgent challenges in the 21st Century, coming up with suitable alternatives for the betterment of humankind. Waste valorisation, going well beyond traditional waste management practices, has the potential to become an alternative for the harvesting of valuable compounds (chemicals, materials, fuels, energy carriers), generating wealth from biowaste, circumventing at the same time environmental hazards and concerns such waste feedstocks have inherently associated.

This contribution is aimed to frame the waste-to-wealth concept as illustrated in a number of (bio)waste valorisation examples from sewage sludge to coffee waste grounds, plastic waste and related others as effective sources of valuable chemicals, biomaterials and biofuels.

Keywords: waste valorisation, green chemistry, sustainability, flow chemistry, environmental remediation