

EUROMAT 2021

EUROPEAN CONGRESS AND EXHIBITION
ON ADVANCED MATERIALS AND PROCESSES

WWW.EUROMAT2021.FEMS.EU

12. - 16. SEPTEMBER 2021

GRAZ, AUSTRIA

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THE AUSTRIAN SOCIETY FOR
METALLURGY AND MATERIALS

FEMS 30
FEDERATION OF EUROPEAN
MATERIALS SOCIETIES
1987 - 2017
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Area H

Symposium H4

| <i>Progress and challenges in plastics recycling</i> | | |
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| Abstract | | |
| <p>Recycling of polymers has become a major economic, environmental, and societal challenge for our current and future society, . Polymer products have conquered many areas of industrial and social life and they provide an outstanding contribution to the high living standard of our modern society. During the past ten years, the plastic waste recycling has increased by almost 80 %.</p> <p>In order to improve the circular economy and the sustainable use, to reduce carbon footprint and to increase resource efficiency, polymers have become one of the five priority areas addressed in the "EU action plan for the Circular Economy" which sets a clear commitment to prepare strategies that focus on the challenges posed by polymers throughout the value chain and taking into account their entire life-cycle, such as reuse, recyclability, biodegradability, the presence of hazardous substances and concerns in marine litter .</p> <p>The strategy to recycle polymers can be divided into three different main routes of (i) reuse, (ii) mechanical recycling and (iii) chemical recycling. Beside legal and social considerations regarding definition and collection of end-of-use products, generally two main barriers must be overcome in order to increase the rate of application, and to enhance the acceptance of recycled polymers in technological quality products:</p> <ul style="list-style-type: none">• First, new reliable, practical and cost-efficient technologies with higher accuracy for material separation are required, which consider the high material diversity of post-consumer waste.• And second, the quality and performance of recyclates must be improved significantly as it is already well known that, compared to virgin materials, recycled polymers show significant changes and deterioration of processing and lifetime relevant properties <p>This symposium will discuss recent advances in the development of mechanical and chemical recycling technologies and ecodesign of polymeric parts and components.</p> <p>¹ Hopewell, J., Dvorak, R., Kosior, E., "Plastics recycling: challenges and opportunities", Philosophical transactions of the Royal Society of London. Series B, Biological sciences 364, 2115–26 (2009).</p> <p>² Mwanza, B.G., Mbohwa, C., "Drivers to Sustainable Plastic Solid Waste Recycling", Procedia Manufacturing 8, 649–56 (2017).</p> <p>³ European Commission, "Implementation of the Circular Economy Action Plan; Available from: http://ec.europa.eu/environment/circular-economy/index_en.htm.</p> | | |