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Sustainable Plastics Strategy: Technologies for a better future of Europe

25-03-2021 Dr. Nieves Gonzalez Ramon. Innovation Manager CEFIC

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Cefic: The voice of the chemical industry in Europe



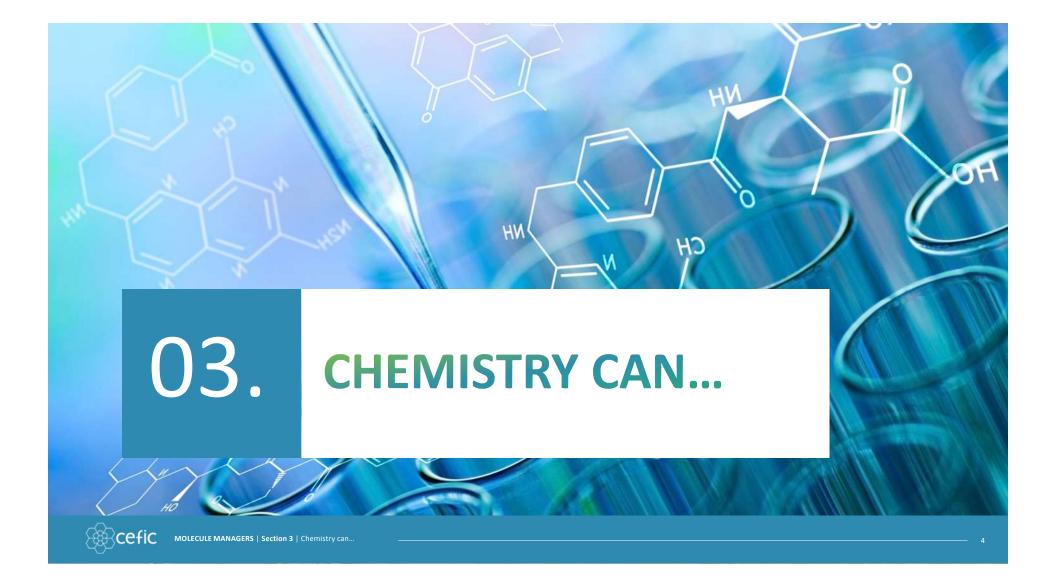


We can lead the way to a sustainable and successful Europe in 2050

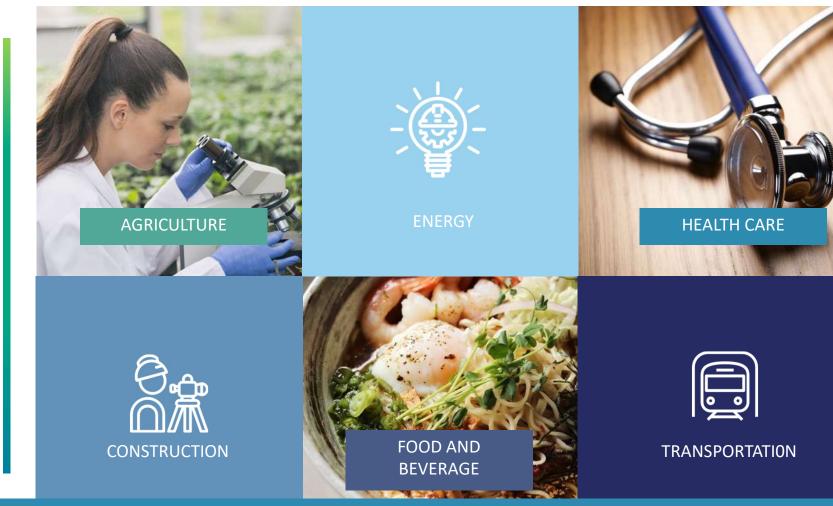




MOLECULE MANAGERS | Section 1 | We live in a changing world



EVERYWHERE **MOLECULES ARE**



Cefic MOLECULE MANAGERS | Section 3 | Chemistry can...



Cefic MOLECULE MANAGERS | Section 3 | Chemistry can...

04.

LET'S DO THIS TOGETHER

Cefic MOLECULE MANAGERS | Section 4 | Let's do this together

Cefic engaging with SusChem (1) suschem

Publications

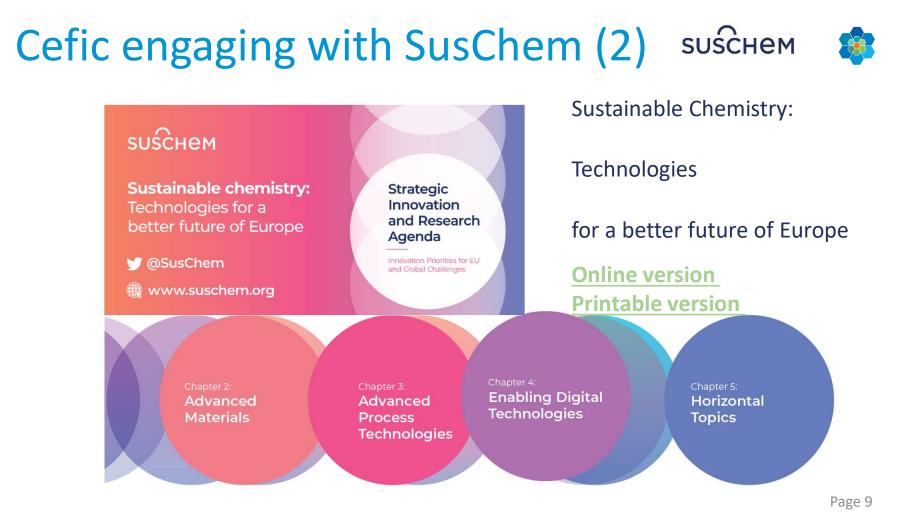


POLYMERS

PLASTIC

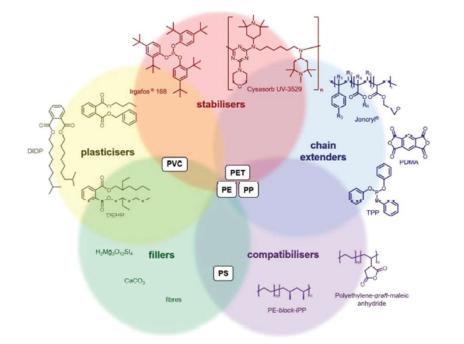
ARTICLES

REUSE



susснем **Sustainable Plastics Strategy** SCHEM **Publication** susснем Sustainable-by-Design December 2020 cefic Sustainable **Plastics Strategy Printable** version **Plastics**Europe Sustainable Recycling Alternative Feedstock _

Enhancement of recyclability (i.e. with new additives)



Sustainable-by-Design

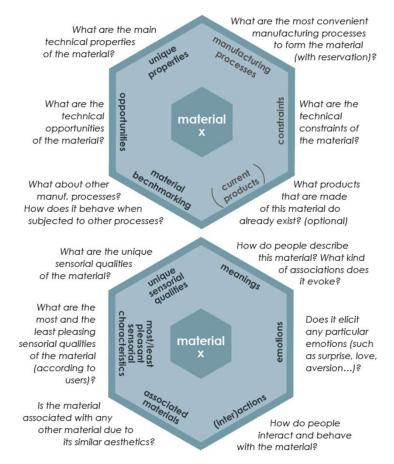


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Common polymer additives used to improve polymer recyclates

(Source: <u>Mechanical Recycling of</u> <u>Packaging Plastics: A Review</u>, 2020)

Design FROM and FOR Recycling susснем 🔹





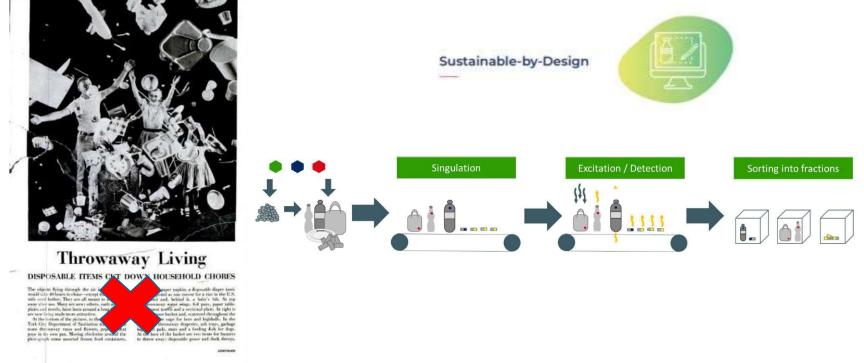


Above: Technical interpretation to formulate processing techniques

Below: Sensorial interpretation to formulate processing techniques

(Source: Design from Recycling, 2019)

Creating value of recycled products susснем 🕸 (re-fillable, in-mold labelling)

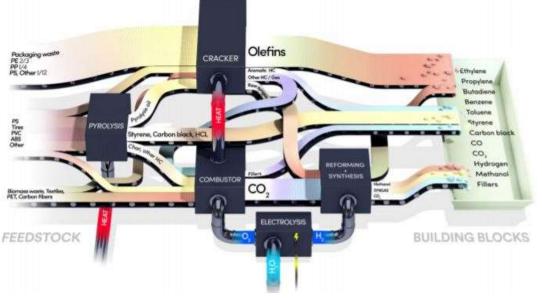


https://time.com/3879873/throwaway-living-when-tossing-it-all-was-all-the-rage/

Moving towards plastics to s plastics: chemical recycling (pyrolysis, gasification, solvolysis, ..)







Sustainable Recycling



Schematic of a material cycle of plastics using chemical recycling from any type of plastic waste with close to 100% carbon recovery (Source: <u>Circular use of plastics-</u> <u>transformation of existing</u> <u>petrochemical clusters into</u> <u>thermochemical recycling plants with</u> <u>100% plastics recovery</u>, 2019)

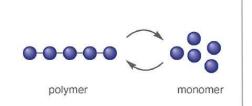
Creating chemicals as building blocks

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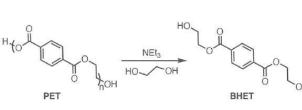


closed-loop chemical recycling to monomer or polymer with equivalent function

b



a



Sustainable Recycling



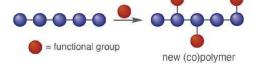
Above: Closed-loop chemical recycling to monomer

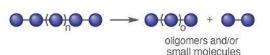
Below: repurposing to modified polymer, oligomer or small molecules

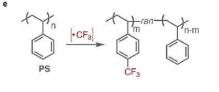
(Source: <u>Redefining sustainable</u> polymers, 2021)

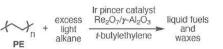


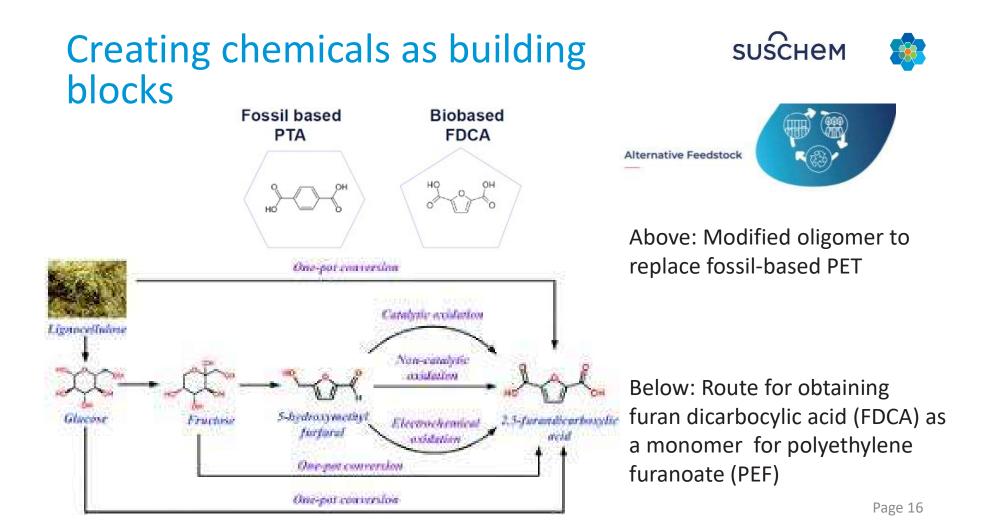














European Technology Platform For Sustainable Chemistry

THANK YOU

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