

Biomimetic Apply to Waste Recycling

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The presentation will discuss climate change and its relation with closing the loop of resources. More specifically, this presentation will address the issue of plastic and tires recycling and why closing the plastic/tires loop is difficult but feasible as you will see. On average, only 8% of plastic waste is recycled and most of it is PET. There are multiple reasons for that, but the main reason is that there are multiple approved processes by which PET can be recycled into food consumer applications. As a result, there is growing demand for recycled PET pellets from the bottling industry which stabilizes price. On other hand, each year, approximately 1.5 billion tires (15 million tons) achieve their end-of-life throughout the world. Regulations banning stockpiling, incineration and landfilling of discarded tires are being adopted in many countries.

The conference will present a new approaches based on:

- Catalytic microwave depolymerisation (CMD) which allows breaking down the polymer chains selectively back into their monomer form and waxes.
- Developing the Thermal Decomposition Process (TDP), a green technology that recycles hydrocarbon waste into commodity products. Scrap tires as feedstock produce carbon black, oil, steel and gas.

The products generated being identical to the synthetic chemicals used by the industry, they can be used directly into the existing polymer manufacturing processes or tires industries without process changes. The recycled chemicals replace synthetic chemicalsthat are normally made through carbon intensive operations. Therefore, using recycled chemicals reduces greenhouse gas emissions. The CMD and TDP technologies are modular and were developed and commercialized by Pyrowave and Ecolomondo. The products are currently being used by worldwide commercial partners and allow them to manufacture recycled plastics for food consumer and packaging applications from postconsumer plastic waste and black carbons in tires industries.