

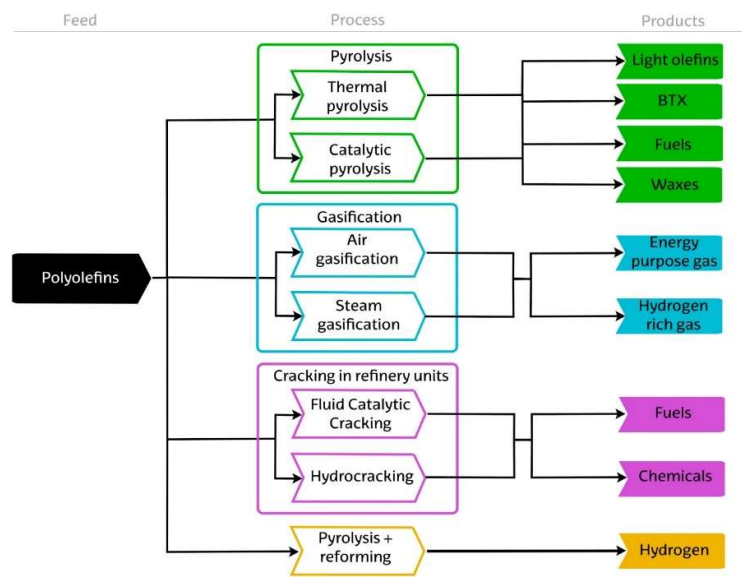
Title: Catalytic conversion of municipal waste

Author: Michael Jenks

My PhD project is going to focus on developing approaches that are able to tackle the challenges plastic waste represents for a circular economy. Since 2014, up to 30 % of plastic used in the EU has been landfilled. The remaining 70 % is either recycled or consumed in energy recovery. In an attempt to reduce landfill and improve recycling/ energy recovery processes, my PhD will take an imaginative approach looking at a variety of techniques, including catalytic pyrolysis, gasification, dissolution and hydrolysis of waste plastic streams to produce energy, valuable chemicals or convert the polymer back into its monomer.

The project will focus upon developing practical solutions and will involve the design and testing of a small-scale reactor as well as the related screening and subsequent characterisation of suitable catalysts and processes via spectroscopic methods. The focus will be on three major plastics, namely PE, PP and PET; while the catalysis will focus on hydrocracking.

An example of some of the processing techniques and products of chemical recycling of polyolefins[1]:



[1] G. Lopez, M. Artetxe, M. Amutio, J. Bilbao, M. Olazar, *Renew. Sustain. Energy Rev.* **2017**, 73, 346–368.