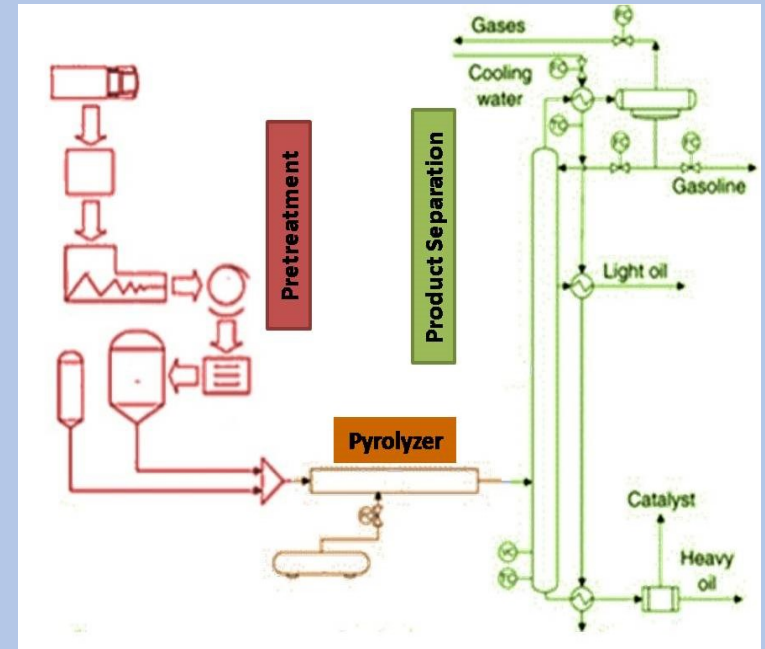


# Plastic Waste Valorization

## Background

- Plastic offer extremely valuable contribution to the society due to its versatile nature and low cost and, therefore, its consumption is increasing at an alarming rate.
- Global plastic market (2020) size is estimated at USD 579.6 billion which is expected to grow at a compound annual growth rate of 3.2%.
- World primary production of plastic was estimated to be 270 MMT while the global plastic waste was found to be 275 MMT.
- Plastic waste is bulkier than other organic waste and thus occupy huge space in landfills and their disposal via incineration results in environment hazards.
- Plastic waste management via recycling is a good option to control plastic menace. Recycling offers the recovery of raw materials, energy and fuels while minimizing the consumption of natural resources.
- Pyrolysis is a promising recycling approach that allow conversion of waste plastic into gases and liquid hydrocarbons of high value.



## Approach

- Pyrolysis involves thermal decomposition in the absence of oxygen at high temperature (300-900°C) due to low thermal conductivity of polymers which is not very selective.
- Catalytic pyrolysis is an alternative to the recycling of plastic waste at considerably lower temperature with enhanced process efficiency targeting the specific reaction.
- Reaction during the pyrolysis of plastic waste on solid catalysts may include cracking, oligomerization, cyclization, aromatization and isomerization.