

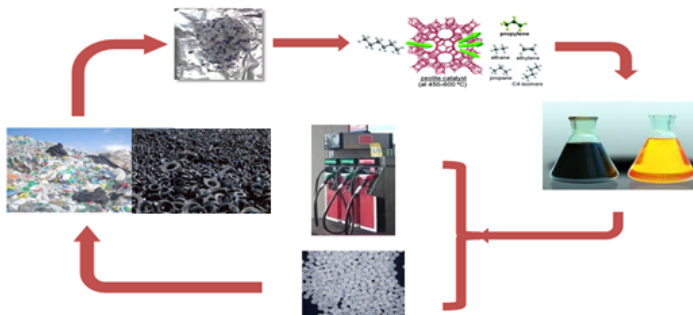
## Plastic / Rubber Waste Pyrolysis

Plastic and rubber wastes are causing an alarming economical / environmental burden that is worsening every year. There is a great need to process these solid wastes efficiently and reduce their global impact. In this context, the catalytic pyrolysis of plastic and rubber wastes is becoming increasingly attractive. This method has the technical advantage of selectively breaking down the polymeric chains into smaller molecules/light products, which can be used as fuel or chemical feedstock. Our research on catalytic pyrolysis covers two pathways:

1- Investigate thermal solar assisted pyrolysis as an approach to achieve high conversion of waste to fuel, while minimizing energy usage and environmental emissions. The high-energy requirements will be no longer the limiting factor and these will be met by concentrating solar radiations to drive catalytic reactions to desired high temperatures.



2- Applied catalysis research and development to design and synthesize new catalysts to improve the efficiency and product quality of the plastic/rubber waste pyrolysis process. The new catalysts are designed according to specific crystalline structures, pore sizes, acidic strengths and surface areas. A number of advanced techniques are employed to analyze and test the characteristics of these catalysts. In conjunction, experimental procedures are conducted on waste HDPE/rubber to determine the effect on the final product distribution and carbon chain length.



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