Study of depolymerization of plastic waste – Part I

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The depolymerization of plastics does not only help to reduce the pollution caused by their accumulation or incineration in municipal solid waste landfills, but also can be a valuable source of organic compounds that could become attractive alternatives to oil and natural gas.

This research brings up various processes for the plastic waste using conventional methods and different microwaves and catalysts. After depolymerization, products obtained will be isolated, quantified and identified. Waste of polyethylene terephthalate (PET), polycarbonate and polyamide will be used.

The PET depolymerization has been optimized and yields above 80% were achieved, so far. Furthermore, polycarbonate has been depolymerized to produce Bisphenol A (BPA). Both monomers, both the PET and the polycarbonate were characterized by spectroscopy of nuclear magnetic resonance (NMR).

The research topic of the project of the Chemistry Section at PUCP is within the field of Materials. Likewise, experience of PET chemical recycling studies performed at PUCP in previous years appears in the project to be applied to the depolymerization of other plastic waste.