

Liquefaction through pyrolysis, hydrothermal liquefaction, thermolysis or other liquefaction technologies is one of the most established routes to chemically recycle plastics. Liquefied waste plastic (e.g. pyrolysis oil) can however contain a varying amount of heteroatom impurities that cannot be sorted out from the waste plastic stream before liquefaction. These heteroatom impurities can cause restrictions in the use of plastic-derived oils as raw material in new plastics manufacturing, and thus impact the scalability of chemical recycling.

The presentation discusses the impact and significance of heteroatom impurities in further processing of plastic-derived oils especially in steam cracking, based on research conducted both independently and in collaboration with the University of Ghent. The presentation offers refinery upgrading as a cost efficient solution for removing said impurities and combines theory with practice by explaining the ongoing investment project PULSE to increase refinery capabilities for processing liquefied waste plastic. PULSE is backed by the EU Innovation Fund as a demonstration of first-of-a-kind technology with potential to significantly reduce greenhouse gas emissions.