

Abstract for presentation at ARC
Cologne, November 2024

Presenter: Eric Appelman, from Aduro Clean Technologies

Topic: Chemical Recycling

“The recycling of mixed plastics is a complex task that requires a combination of mechanical and chemical recycling technologies to handle the whole mixture and create product streams that are sufficiently valuable to carry the cost. A particular concern is presented by the leftovers after taking out the fraction for mechanical recycling: they are complex and contaminated, and the chemical recycling pathways to deal with them, such as pyrolysis become prohibitively expensive, when necessary, after(hydro)treatment is taken into consideration. Failure to properly deal with the tail ends may jeopardize the economic viability of the whole system of combined recycling operations.

In this context, the Aduro Hydrochemolytic™ Technology provides a most interesting alternative to conventional pyrolysis: it not only breaks down difficult plastic waste mixtures into a substantially saturated hydrocarbon product (no hydrogenation required for olefin removal), it also selectively removes all heteroatoms through a hydrolysis pathway followed by a simple physical separation step. All of this combined massively reduces the aftertreatment need, while allowing much more contaminated feedstock to begin with, and avoiding the use of molecular hydrogen.

After having built a solid foundation of intellectual property on the chemistry side, Aduro has now taken major steps on the reactor and process design. Our presentation will include an in-depth explanation of the unique chemistry, and a description of the reactor technology that is under development.”