

## **Avantium launches high-throughput polymer research services**

To support Avantium's continued growth in the market of high-throughput experimentation Avantium has expanded its capabilities in polymer process development by installing a new workflow at its Delft facility in the Netherlands. The platform provides customers a unique opportunity to access novel high-speed research capability in the area of polyolefins.

Avantium's customers will get access to a state of the art workflow, including homogeneous and heterogeneous catalyst preparation, catalyst testing and product analysis. Gert-Jan Gruter, Chief Technology Officer of Avantium commented: "We are excited to offer this new and high tech capability to the polymer industry which will allow customers to increase their R&D output by at least a factor of 10, reduce overall cost and at the same time improve on data consistency. This will enable our customer to develop new products and solutions faster than ever before. We are confident that Avantium will deliver significant value to polymer companies by allowing customer to access this unique platform and dedicated skill sets. Three leading companies in the polymer industry have already committed to research projects on Avantium's new workflow, which demonstrates the need for this high speed experimentation technology".

After half a year of building up the equipment, and after thorough commissioning studies and safety appraisals, Avantium has taken its Polyolefin Platform in Delft in operation. The main focus is on accelerating research and development for Avantium's industrial customers in the area of polyolefins. Polyolefins comprise about 60% of polymer production worldwide, and there is a growing interest to develop new catalytic systems to improve yields and selectivities in polyolefin synthesis. Together with Avantium's automated catalyst preparation techniques, Design of Experiment and data handling capabilities, Avantium can now offer a fully integrated workflow for polyolefin catalyst development and optimization.

In addition to catalyst discovery and development projects include donor optimization studies and determination of operating windows of catalyst systems. In all cases Avantium's capabilities will enable customers to find solutions in a much shorter timer; programs that normally would take months can now be completed in weeks.

The polyolefin platform consists of eight fully automated reactors with integrated handling of catalysts, co-catalysts, and additives under inert atmosphere. The reactors have automated temperature and pressure control and can be operated at temperatures from room temperature up to 200 °C, and at pressures up to 100 bar. The main features include an advanced automated liquid feed system, automated slurry feed system for heterogeneous catalysts, automated gas feed per reactor, automated product removal, and automated cleaning of the reactors.

The fully automated workflow, from gas dosing to liquid and catalyst dispensing, to work-up of the polymer product samples and cleaning, enable unattended execution of consecutive reactions.

A special feature is the in-situ monitoring of the head space composition of each reactor enabling feedback to the gas dosing system. In this way, the more reactive gaseous monomers can be fed to the reacting system preferentially. Also the H<sub>2</sub>-levels can be kept constant, even at low levels, during the polymerization experiments. Avantium provides response surface models (RSM) to identify the operational conditions required for the customers` targeted product properties.

The Polyolefin Platform is part of a high throughput workflow, which also includes GPC, IR, DSC, and other types of analysis available on request. Polymer yield, gas uptake profiles and information on morphology and bulk density can also be obtained. In addition to the high quality catalyst screening capabilities, technology for catalyst synthesis (both homogeneous and heterogeneous) and pre-screening can be deployed within this workflow.

If you would like more information about Avantium's Polymerization Platform please contact us at: [info@avantium.com](mailto:info@avantium.com)