

# GPCIR

GEL PERMEATION CHROMATOGRAPHY



## High Temperature Polyolefin GPC/SEC instrument.

GPCIR is a High Temperature Gel Permeation Chromatograph dedicated to polyolefin analysis. It incorporates an infrared detector with sensors for concentration and composition measurement of short chain branching or carbonyls. It can be configured as a quadruple detector system with Concentration, Viscometer, Multi-Angle Light Scattering (DAWN® HELEOS™ II from Wyatt Technology) and Composition detectors. A very sensitive Composition-Concentration infrared detector with MCT sensor (IR5 MCT) can be additionally incorporated for the analysis of a low branching content in HDPE pipe resins.

GPCIR columns oven is independent from the detectors/injector oven, preventing the columns from suffering during maintenance tasks. This design allows detectors/injector preventive maintenance and the loop volume to be changed without affecting the columns temperature.

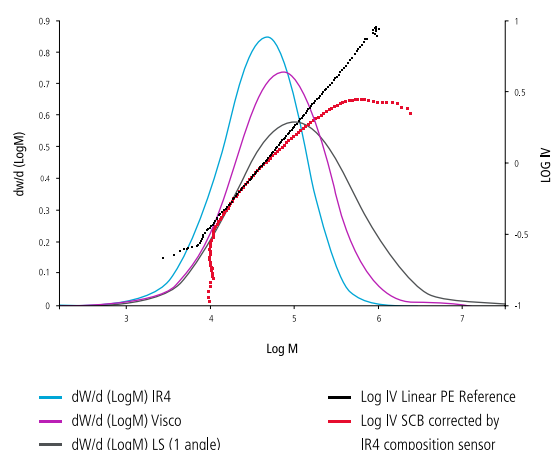
The autosampler is a separate unit with 70 vials of 10mL attached to the detectors/injector oven through a heated interface. The sample preparation only consists of weighting the samples, since the vials are filled automatically. They stay in the high temperature oven just the needed time for dissolution, to minimize the sample oxidation and in addition there is no vial transfer. After dissolution time (different dissolution times can be selected for each sample), the sample is automatically filtered by an in-line filter before the injection.

GPCIR virtual instrumentation software provides instrument control and monitoring of the whole process and signals generated. GPC One, the most comprehensive calculations software, which was developed in collaboration with the industry leaders, is capable of integrating all the detectors signals in a single package. In addition, the system includes remote control for easy and fast diagnosis.

## KEY POINTS

- ▶ Dedicated columns oven with 0.01°C control.
- ▶ Sample preparation fully automated.
- ▶ In-line filtration system with automated cleaning at every injection.
- ▶ Infrared detector IR4+ for improved S/N ratio and baseline stability with concentration and composition sensors.
- ▶ Capillary viscometer.
- ▶ Light Scattering (DAWN® HELEOS™ II from Wyatt Technology).
- ▶ Possibility of coupling IR5 MCT for measurement of low branching content in HDPE resins.
- ▶ Most complete calculations performed easily by GPC One Software.

Triple detector GPC results of a LDPE resin



## The broadest range of instruments for Polyolefin Characterization.

- **CRYSTAF**: an instrument designed for intensive use in the analysis of the Chemical Composition Distribution in Polyolefins.
- **TREF**: a completely automated apparatus for the analysis of the Chemical Composition Distribution in Polyolefins by TREF. It provides complementary information to CRYSTAF data in the analysis of some complex resins.
- **CRYSTAF-TREF**: CRYSTAF and TREF techniques are available in the same equipment for a full Chemical Composition Distribution characterization.
- **CRYSTAF QC**: a simple and robust apparatus for the precise and fast analysis of the Chemical Composition Distribution in a Quality Control environment.
- **CEF**: a high throughput equipment to analyze the Chemical Composition Distribution in polyolefins, using a new approach which combines CRYSTAF and TREF separation mechanisms.
- **CFC**: a fully automated Cross Fractionation Chromatograph (TREF+GPC) for the analysis of the Bivariate distribution in Polyolefins.
- **CRYSTEX**: an apparatus specially designed for the analysis of Xylene Solubles in polypropylene in a Quality Control environment with no solvents handling.
- **GPC<sub>IR</sub>**: a new High Temperature GPC for the analysis of MWD in Polyolefins. Fully automated sample preparation and filtration. Triple detector+composition.
- **GPC One Software**: the most comprehensive GPC Calculations Software available in the market integrating all detectors signals in the same package.
- **Data Unit 200**: Versatile signals acquisition device to link any vendor GPC instrument with Polymer Char's GPC acquisition and calculations unit.
- **PREP mc<sup>2</sup>**: an automated instrument to perform semipreparative fractionation of polymers according to composition or molar mass.
- **IR4**: a reliable IR detector that can work with up to four simultaneous wavelengths to measure concentration and composition.
- **IR5 MCT**: a modern IR detector with a sensitive MCT element (thermoelectrically cooled) for the analysis of low number of branches in HDPE pipe resins by GPC<sub>IR</sub>.
- **Additional Detectors**: in some of its instruments Polymer Char offers Light Scattering (DAWN<sup>®</sup> HELEOS<sup>™</sup> II of Wyatt Technology), Viscometry and Composition (by Polymer Char) to perform Triple Detector+Composition analysis.

### Company Profile

Polymer Char, the world's leading Polyolefin Characterization Company, is devoted to the development of state-of-the-art instrumentation for Polyolefin Analysis.

Polymer Char goes as far as Polyolefin Analysis techniques and Engineering Technology and advancement is concerned, with the broadest and most modern range of products for Polymer Analysis and more specifically, for Structural Characterization of Polyolefins, such as Chemical Composition Distribution (CCD), Molar Mass Distribution (GPC/SEC), Bivariate Distribution, Xylene Solubles, Preparative Fractionation or Infrared Detection.

The company is well known also by its advanced approach into virtual instrumentation software, that together with excellent Remote Control capabilities and its strong commitment to Customer success, places the company in the leading edge on instrumentation Diagnostics and Technical Support.

Polymer Char was formed as Polymer Characterization, S.A. in 1992 at the Valencia Technology Park in Spain with the initial goal to develop a commercial CRYSTAF instrument. Now, after almost two decades in the Polyolefin Characterization industry, backed with unmatched technical expertise and insights, Polymer Char maintains the highest levels of Quality and Service that go with the needs of the Petrochemical, Research and Academic industries.

Today, Polymer Char provides to the leading Petrochemical firms, as well as to prestigious R&D Institutes and Universities from all around the world. Its instruments are present in over 20 countries, within the Americas, Europe, Africa, Middle East and Asia.

Polymer Char's knowledge investments are backed by years of R&D and have led to the creation of state-of-the-art Polyolefin lab in Valencia in 2008 from where the company supplies Analytical Services in over 30 countries.



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