PREP mc²

PREPARATIVE FRACTIONATION

Full characterization of Polymers by Preparative Fractionation.

PREP mc² is a preparative instrument intended for fractionating polymers by molar mass or by composition (TREF or CRYSTAF). Samples are put into the vessels and the fractionation is performed automatically according to the selected method conditions in less than 24 hours.

Molar Mass fractionation is based on the solvent interaction with the polymer chains through a solvent/non-solvent combination. Polydispersity of resulting fractions can be very narrow.

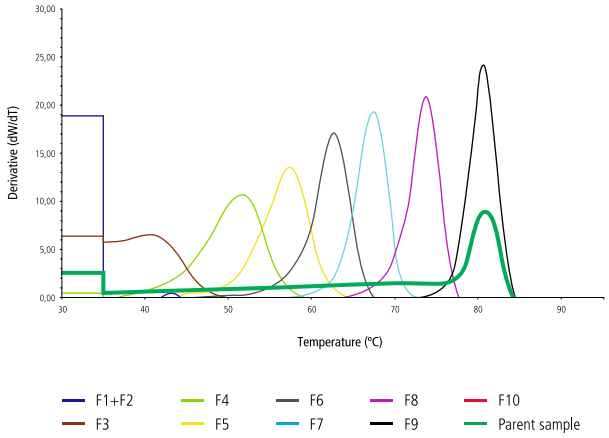
Composition fractionation is based on differences in crystallizability of the copolymer resins and can be performed by dissolution (TREF) or by precipitation (CRYSTAF) approaches. A single solvent is used to separate fractions according to their composition by dissolution at different temperatures.

This instrument facilitates the cross-fractionation studies, which have been shown as a needed tool to fully characterize resins.

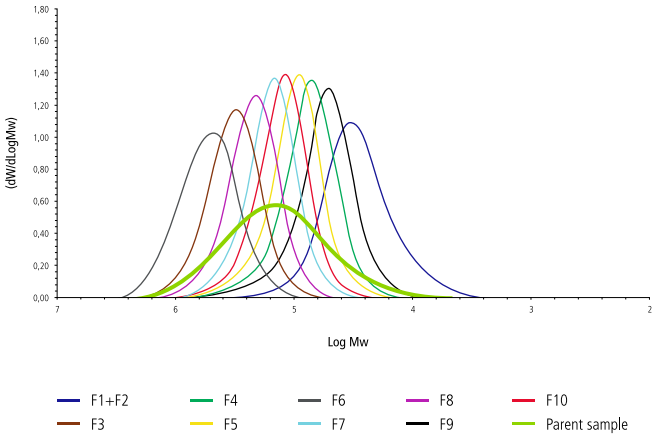
KEY POINTS

- Fully automated fractionation process:
  - Two samples can be fractionated simultaneously.
  - No hot solvents handling.
  - Fractionation up to 2 grams of sample.
  - Up to 16 fractions can be obtained from a parent sample.
- Possibility of subambient operation (down to -20°C) for low crystallinity samples.
- Flexible hardware and software to carry out different fractionation methods.

CRYSTAF analysis comparison of 7 fractions by composition



GPC analysis comparison of 9 fractions by molar mass



Polymer Characterization, S.A. Gustave Eiffel, 8 Paterna E-46980 Valencia, Spain T.: +34 96 131 81 20 F.: +34 96 131 81 22 info@polymerchar.com www.polymerchar.com

Polymer Char

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$_{IR}$:** 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^2:** 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$_{IR}$.
- **Additional Detectors:** in some of its instruments Polymer Char offers Light Scattering (DAWN® HELEOS™ 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.

GENERALITAT VALENCIANA IMPIVA MINISTERIO DE CIENCIA E INNOVACIÓN MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO EUROPEAN UNION European Regional Development Funds

Several Polymer Char's R&D projects have count on the financial support of IMPIVA, the Spain's Ministries of Science and Innovation and of Industry and Trade; and the European Union, with its Funds for Regional Development within the FEDER operational program of the Valencia Community 2007-2013.