

Title: Characterization of POE Fractions by Cryo-TREF (Poster)

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Abstract:

Polyolefin elastomer (POE), strong yet flexible with low density, is an excellent impact modifier applied in various industrial products. Cryo-TREF is one of the most suitable chemical composition distribution (CCD) characterization method for semi-crystalline polyolefin with outstanding resolution. Four POEs (ethylene-octene) with similar density and MI are first dissolved in boiling n-C7 alkene then precipitated overnight and separated by centrifugation, getting eight portions in sum. Parent, C7-soluble and C7-insoluble of each POE sample run GPC and cryo-TREF respectively. GPC results show minor difference in MW and MWD, however, cryo-TREF provide remarkable comparison not only between POEs but also POE portions especially during the temperature range from -15°C to 60°C which is unavailable by room temperature TREF. Insol and sol contribute to parent obviously on CCD curves with well aligned comonomer content trends. Sample A and B are less crystalline than sample C and D, but sample B is the narrowest one. Curves of sample C and D look similar while sample D has high weight portion at high temperature. The combination of physical extraction and cryo-TREF give out exciting details on POE molecular structures.

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