

## **Isothermal Fractionation by DSC : Stepwise Isothermal Segregation Technique applied to Random C<sub>3</sub>C<sub>2</sub> copolymers.**

**Federica Malizia<sup>1</sup>, Giuseppe Ferrara<sup>1</sup>, Paolo Ferrari<sup>1</sup>, Carla Marega<sup>2</sup>**

<sup>1</sup>*Basell Poliolefine Italia S.r.L. (Italy)*

<sup>2</sup>*Chemical Science Department, University of Padoa (Italy)*

Stepwise Isothermal Segregation Technique (SIST) offers a quick and practical way to study the molecular structure of homopolymers and copolymers. The melting pattern obtained after the designated thermal cycles is a characteristic “fingerprint” for small variations in structure as a result of the sequence of applied isothermal crystallization steps. The final thermogram represents a lamellae size distribution as developed at different crystallization temperatures; this fingerprint can be connected to the variations in the polymerization process, the molecular weight of the polymer as well as the defects (both geometrical and chemical) along the chains.

At ICPC we want to compare and comment on the results obtained by studying three random C<sub>3</sub>C<sub>2</sub> copolymers by SIST. They are all commercial resins produced by Ziegler-Natta type catalyst with very similar ethylene content and MFR-L 45 dg/min for TWIM application. In particular we are interested in determining the ability of SIST in differentiating the three considered grades as well as in understanding the nature and the morphology of crystallinity developed during the thermal treatments. The last information has been achieved by both WAXS and SAXS analysis on thermally treated samples.