



UNIVERSITÀ DEGLI STUDI DI NAPOLI "FEDERICO II"

Dipartimento di Scienze Chimiche

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***Research Doctorate (Ph.D.) in Chemical Sciences
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Tutor:

Vincenzo Busico

Project Information

1 - Title

Catalytic olefin polymerization via high-temperature solution processes

2 - Key words

Polyolefins, catalyst, kinetics, microstructure, block copolymers

3 - Abstract

Catalytic olefin polymerization in solution is advancing very fast. Novel classes of molecular catalysts able to operate at high-temperature (100-250°C) opened the door to a variety of novel materials. A most outstanding case is the production of block copolymers of ethene with higher 1-alkenes via tandem catalysis under a reversible trans-alkylation regime, which requires a high mobility of the growing polymer chains. In general, molecular kinetic investigations of such polymerizations are very difficult, due to the rather extreme reaction conditions and the great complexity of the variables hyperspace. As a matter of fact, the studies currently available in the open literature can be counted on one hand's fingers, and are inadequate to highlight reaction mechanisms and structure-properties relationships. In the present PhD project, we intend to fill this gap by using systematically state-of-the-art High Throughput Experimentation (HTE) tools and methods.