

MODEL POLYMERS: FROM DESIGN TO APPLICATIONS

Nikos Hadjichristidis

King Abdullah University of Science and Technology (KAUST), Physical Science and Engineering Division,
KAUST Catalysis Center (KCC), Polymer Synthesis Laboratory, Thuwal 23955 Saudi Arabia
Email: nikolaos.hadjichristidis@kaust.edu.sa

ABSTRACT

Access to model polymers (high degree of structural, compositional and molecular weight homogeneity) is necessary in order to elucidate structure-property relationships, which are the key in improving polymer performance and designing new materials. The synthesis of model polymers by anionic polymerization high vacuum techniques is demanding, time consuming and often leads to a small quantity of products. Nevertheless, this is a small price to pay given the tremendous potential of the model macromolecules for selecting the appropriate structures needed for specific applications.

Among others these model polymers serve in: Better testing existing theoretical concepts;
Developing new theoretical concepts to explain experimental results on novel structures;
Understanding/Improving the properties of industrial polymers.

A few examples will be given, showing the importance of such model polymers in conventional and high-tech applications.