

EVIDENCES OF A HYDROLYSIS PROCESS IN THE SYNTHESIS OF N-VINYLCAPROLACTAM-BASED MICROGELS

Ainara Imaz, Jacqueline Forcada

*Institute for Polymer Materials POLYMAT and Grupo de Ingeniería Química,
Facultad de Ciencias Químicas, Universidad del País Vasco/EHU,
Apdo. 1072, 20080 Donostia-San Sebastián, Spain*

Abstract

Poly (N-vinylcaprolactam) (PVCL) is known as a thermo-responsive polymer with phase transition in the region of physiological temperature. However, in the synthesis of this polymer, the monomer (VCL) can suffer hydrolysis. The analysis of the hydrolysis process (secondary reactions) suffered by VCL during polymerization is of great importance. These undesirable reactions should be avoided or the by-products may be eliminated when the final material is used in biomedical applications. If the material presents undesired or unknown products, the patient would have adverse reactions originating from an unforeseen bioincompatibility.

The objective of the present work was to analyze the hydrolysis process observed in the free radical polymerization carried out to produce VCL-based microgels. The reactions were carried out by using different concentrations of initiator (KPS) in the recipe, in a batch reactor and by feeding the initiator in a semi-batch reactor.