

Nanostructured surfaces

Synthesis and characterization of PLina-g-PSty and PLina-g-PF₅Sty-g-PSty graft copolymers by using nitroxide mediated copolymerization

Abdulkadir Allı¹, Sema Allı¹, Muharrem Gökçen², Baki Hazer³

¹ *Chemistry Department, Faculty of Arts and Sciences, Düzce University, Düzce, Turkey, E-mail: abdulcadiralli@duzce.edu.tr*

² *Physics Department, Faculty of Arts and Sciences, Düzce University, Düzce, Turkey*

³ *Chemistry Department, Faculty of Arts and Sciences, Bülent Ecevit University, Zonguldak, Turkey*

To synthesize oil-based polymers, one of the most general routes is auto-oxidation of polyunsaturated oil/oily acids. Using this method, polyunsaturated oil/oily acids were utilized to obtain macropoxy initiators and graft copolymers were obtained via free radical polymerization [1]. Polymeric linoleic acid graft copolymers were synthesized via nitroxide mediated radical polymerization (NMRP) method in the presence of 2,2,6,6-tetramethylpiperidinyl-1-oxy (TEMPO). For this purpose, PLina-ox exposed to polymerization with styrene (Sty) or Sty and pentafluorostyrene (F₅Sty) in the presence of TEMPO by NMRP method in order to obtain PLina-g-PSty and PLina-g-PF₅Sty-g-PSty graft copolymers with controlled structure and low polydispersity. Chain extension study was evaluated. Principal parameters, such as monomer concentration, initiator concentration, and polymerization time, which effect the polymerization reactions, were evaluated. The products thus obtained were well characterized by ¹H NMR, GPC and ¹⁹F NMR measurements [2].

Acknowledgement

This work was supported financially by Turkish Scientific Research Council, TÜBİTAK, (Grants Numbers:110T884).

References

1. Allı A., Allı S., Becer C.R., Hazer B., Nitroxide mediated copolymerization of styrene and pentafluorostyrene initiated by polymeric linoleic acid // European Journal of Lipid Science and Technology.- 2015.DOI: 10.1002/ejlt.201500129
2. Allı A., Hazer B., Synthesis and Characterization of Poly(N-Isopropyl Acryl Amide)-g-Poly(Linoleic Acid)/Poly(Linolenic Acid) Graft Copolymers // Journal of the American Oil Chemists Society.-2011.-**88**. N 2.-P. 255-263.