



P-13-715

**SYNTHESIS AND PROPERTIES OF AN AMPHIPHILIC THREE-BLOCK COPOLYMER BASED ON
POLYSTYRENE- B-CYCLODEXTRIN-POLY GLYCIDOL**

M. Abdouss^a, A. Dehghan^a, M. Adeli^{b,c}, R. Kabiri^d, Mehran Ghiaci^e

a: Department of Chemistry, Amirkabir University of Technology, Tehran, Iran, b: Department of Chemistry, Faculty of Science, Lorestan University, Khoramabad, Iran, c: Nanotechnology Center of Lorestan University, Khoramabad, Iran, d: Lab of NMR, Faculty of Chemistry, Tabriz University, Tabriz, Iran and e: Department of Chemistry, Isfahan University of Technology, Isfahan, Iran

In this investigation We will try to syntheses an Amphiphilic star copolymer containing β -cyclodextrin (β -CD) core. Polystyrene arms have hydrophobic properties and poly glycidol side has hydrophilic properties. On the other hand β -cyclodextrin is capable to use as a nanocarrier for some molecules. We hope that the produced copolymer can be used in drug delivery systems as a drug carrier. The size of β -cyclodextrin is a very important factor that can susceptible it for use as a nano carrier for drugs and biological molecules. Amphiphilic properties in this polymer capable it for use in special systems. In first step we will try to replace 7 anomeric (OH) groups in one side of β -cyclodextrin with polystyrene chains selectively by anionic polymerization of styrene. 7 anomeric(OH) groups in β -cyclodextrin can be replasled by an intermediate compound that be able to act as an initiator for anionic polymerization of styrene. ¹H NMR and ¹³C NMR spectroscopy have been used to proof the structure of intermediate. IR, ¹H NMR and ¹³C NMR spectrum can determine the structure of polystyrene- (β -cyclodextrin). Solubility of produced copolymer in common solvents will be investigated. In next step 14(OH) groups in another side of β -cyclodextrin can use as initiator for ring opening polymerization of glycidol. For this purpose a base, like sodium hydride or butyl lithium add to polystyrene- (β -cyclodextrin) to create an initiator for ring opening polymerization of glycidol. ¹H NMR, ¹³C NMR and FT-IR spectroscopy have been used to identification of produced copolymer. TEM experiments can show polymer in solid state and GPC test for determination of molar mass and polydispersity.