



**THE EFFECT OF STRUCTURAL PARAMETERS ON THE BEHAVIOR AND PROPERTIES OF PP/EPR  
IN-REACTOR ALLOY SYNTHESIZED BY MULTI-STAGE SEQUENTIAL POLYMERIZATION**

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The rheological behavior, morphology, mechanical and thermal properties and also molecular structure of in-reactor alloy of Polypropylene (PP)/Ethylene Propylene Rubber (EPR) synthesized by multi-stage sequential polymerization were investigated. The alloys were characterized by RMS, SEM, mechanical testing, DSC, NMR and GPC. The electron microscopy of samples showed that as the switch frequency increased, the size of dispersed phase decreased. Mechanical measurements revealed that impact strength increased when the size of dispersed phase decreased. The small amplitude oscillation rheometry showed that storage modulus and viscosity shifted to higher values when switch frequency increased. NMR results were used for the evaluation of compatibility between the two phases, when switch frequency is changed. DSC results showed that  $T_m$  and  $T_c$  were almost independent of switch frequency but crystal content in the alloy was be high and  $\Delta H$  increased about 13% when the size of dispersed phase decreased. It was found from the GPC results that switch frequency affected slightly on the molecular weight distribution of copolymer but it had no effect on homopolymer.