

Synthesis of Poly(vinyl alcohol) with High Molecular Weight and High Syndiotacticity by Suspension Polymerization

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Poly(vinyl alcohol) with high syndiotacticity and high molecular weight was prepared by suspension polymerization. The degree of polymerization, conversion, syndiotacticity and degree of the saponification of PVAc were studied. PVAc was prepared using PVA as a surfactant and 2,2'-azobis(2,4-dimethyl-valeronitrile) as initiator in the suspension polymerization. PVA was produced by the saponification of PVAc homopolymer or copolymers as precursor polymers. NaOH/MeOH and KOH/THF were used for saponification systems. PVA prepared by the saponification method was found to have degree of polymerization over 2,200 and the syndiotacticity up to 65%. Melting temperature of PVA with degree of saponification over 99+ % was 232°C. According to ¹H-NMR data, higher degree of saponification resulted in higher syndiotacticity.