

Polypropylene Nanogel “Myth or Reality”

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Abstract - The objective of this work is to study the formation of nanogel and microgel in modified PP. The modified PP in pellets was synthesized by gamma irradiation of pristine PP under a crosslinking atmosphere of acetylene in dose of 12.5 kGy, followed by thermal treatment for radical recombination and annihilation of the remaining radicals. The thin film gel of the polypropylenes was obtained by extraction in boiling xylene for period of 12 h at 138 °C, followed by decantation in becker at room temperature of 25°C with the total volatilization of the xylene and deposition of dried material film on fine glass blades under agitation by Settling process. The thin film gel formed of pristine PP and modified (i.e., irradiated) was characterized using scanning electron microscopy (SEM), field emission scanning electron microscopy (FESEM) and differential scanning calorimetry (DSC). The PP morphology indicated the nanogels and microgel formation with increase of spherulitic concentration and crystallinity at dose 12.5 kGy.

Keywords: Nanogel, Microgel, Spherulite and Polypropylene

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