Study of HMS-PP gel formation

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ABSTRACT

High melt strength polypropylene (HMSPP) is the name used for the commercial long chain branched iPP, recently developed and introduced in the market by major international polypropylene producers. The HMS-PP in pellets was synthesized by gamma irradiation of pristine PP under a crosslinking atmosphere of acetylene in different doses of 5 kGy, 12.5 kGy and 20 kGy, followed by thermal treatment for radical recombination and annihilation of the remaining radicals. The gel content of the modified polypropylenes was determined by extraction in boiling xylene containing antioxidant Irganox 1010 for period of 12 h at 135 °C. The gel formed of pristine PP and modified, (i.e., irradiated) was characterized using Optical microscopy (MO), Scanning electron microscopy (SEM), Fourier transformed infrared spectroscopy (FTIR) and X–ray diffraction from the bulk. The HMSPP morphological study indicated the microgel formation with increase in the dose 20 kGy.

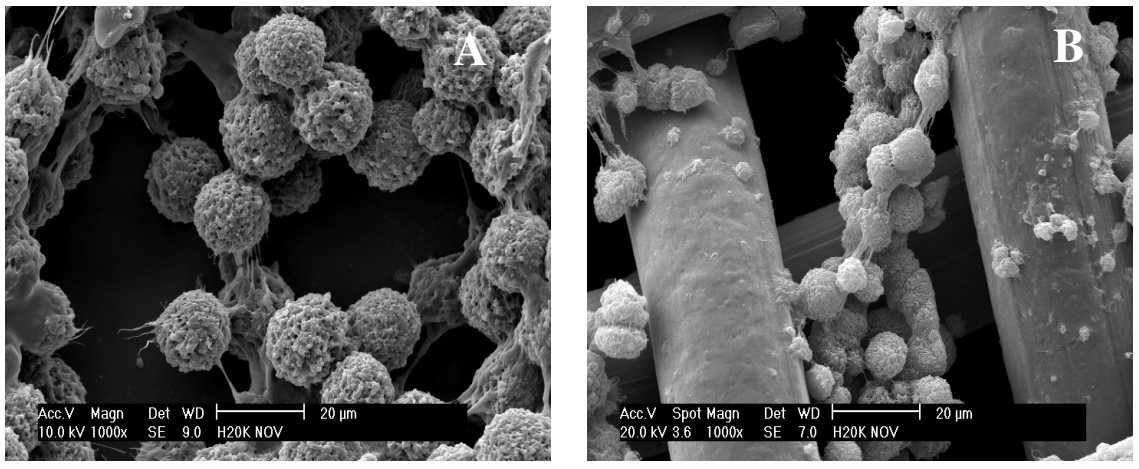

Figure 1 - Gel from solution crystallized of HMS-PP 20 kGy: (A) In glass substrate and (B) In net steel

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