

Photoinduced Graft Copolymerization of
Acrylic Acid onto Isotactic Polypropylene

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Graft of acrylic acid(AA) onto isotactic polypropylene(iPP) film was investigated. Graft copolymerization was carried out with ultraviolet(UV) irradiation method in the presence of benzophenone(BP) as photosensitizer.

The most suitable reaction temperature was 70°C for the maximum grafting yield. The dependence of rate of grafting on monomer and BP concentration was found to be 0.63 and 0.64 order, respectively. Activation energy for the grafting was 3.25 Kcal/mol.

Moisture regain and swelling properties of grafted samples were markedly improved by the grafting of AA monomer.

The crystallinity of grafted sample, as deduced from DSC, X-ray diffraction measurement, was decreased a little with increasing grafting yield 100% and beyond which decreased sharply. Infrared spectra showed the decrease of crystallinity indirectly.

Mechanical properties of grafted samples were also studied.

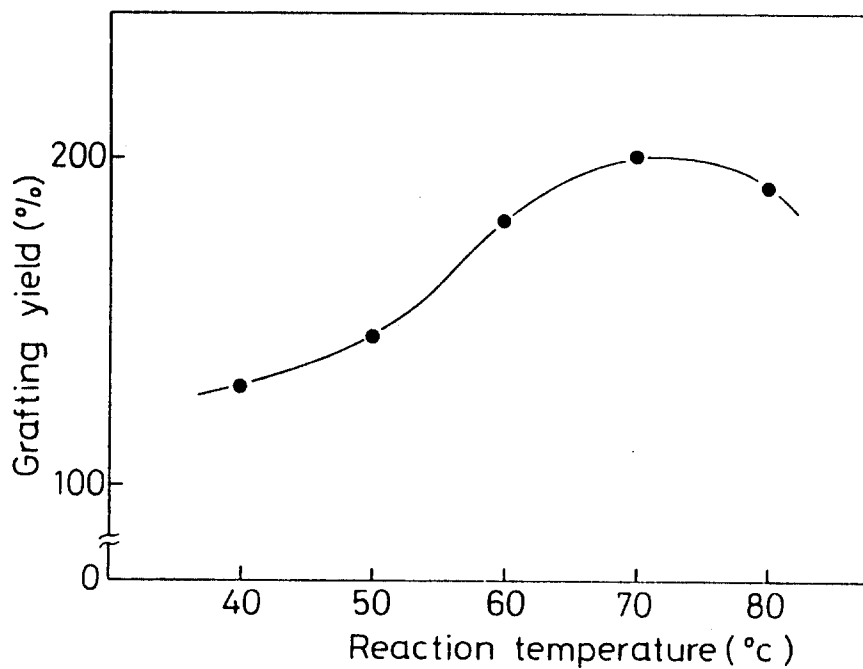


Fig. 2. Effect of reaction temperature on the grafting yield;
Reaction time, 45 min; composition of solution: AA
concentration, 2.0 mol/l; BP concentration 0.15 mol/l