Photoinduced Graft Copolymerization of Acrylic Acid onto Nylon 6 Film

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The grafting of acrylic acid(AA) onto Nylon 6 film (bi-axially oriented film) has been investigated by simultaneous-irradiation technique in the aqueous solution in the presence of benzophenone(BP)as photosensitizer.

The effect of various reaction condition involving monomer concentration, photosensitizer concentration, reaction time and temperature were studied. And also the grafting rate was evaluated. The graft yield was increased with increasing monomer and photosensitizer concentration up to limiting value and after decreased.

The graft yield on reaction time rose up to 90 min. and leveled off. The contact angle of untreated Nylon 6 film to water(63°) decreased to 41° after 70% graft yield and the degree of swelling was increased with increasing the graft yield.

We also studied the mechanical, thermal properties and the crystallinity.

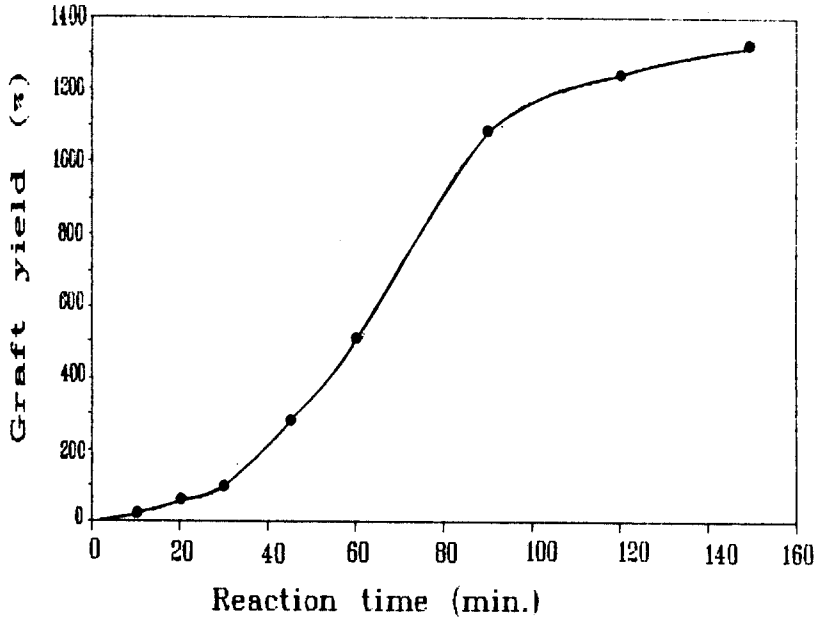

Fig.1. Effect of reaction time on the graft yield of Nylon6-g-AA films.

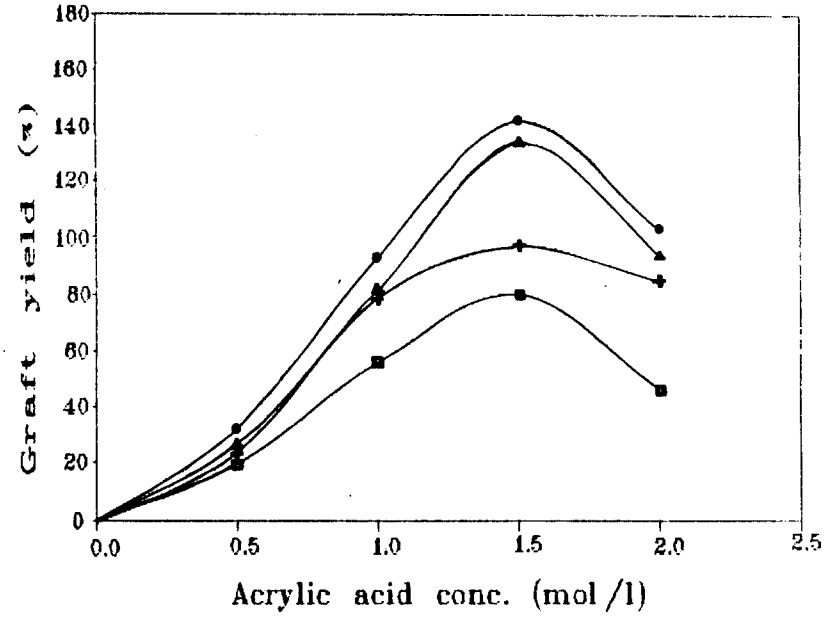

Fig.2. Effect of monomer concentration on the graft yield of Nylon6-g-AA films.
BP conc. (mol/l) : (△) 0.05, (○) 0.10, (+) 0.15, (□) 0.20