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Graft Copolymerization of acrolein onto Kevlar-49 Fiber Surface

Eun-Young Kim, Joo-Young Kang, Tae-Woo Kim, Han-Do Kim
Dept. of Textile Eng., Pusan National Univ., Pusan Korea

The anionic graft copolymerization of acrolein onto Kevlar 49 fiber surface was carried out using metalation reaction in a DMSO solution of sodium hydride. Studies have been made on the effects of reaction conditions on the grafting percentage(GP) and on the tensile strength of the fiber. GP significantly increased with increasing NaH concentration, polymerization temperature and time. The tensile strength of the fiber decreased with increasing NaH concentration, polymerization temperature and time. Espacially, in this grafting reaction, the grafting percentage was above 50%, the tensile strength of Kevlar fiber was decreased notably. Completion of grafting time was shown that grafting temperatures of 0℃, 10℃ and 20℃ were about 10 sec and grafting temperatures of 30℃ and 40℃ were about 1 sec.

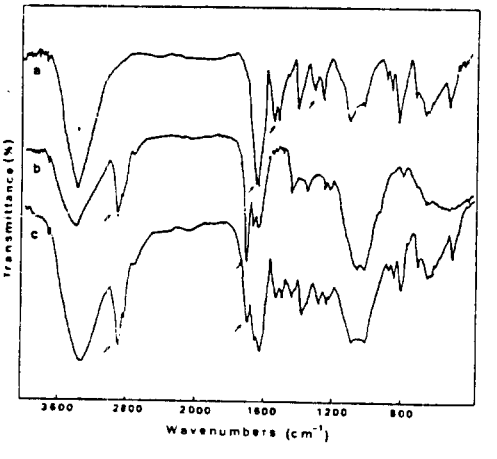

Fig.1. IR spectra of the original Kevlar fiber(a), polyacrolein(b) and Kevlar-g-polyacrolein(c)