

자외선 조사에 의한 폴리에스터의 광가교

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Photocrosslinking of Polyester by UV irradiation

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Abstract

Poly(ethylene terephthalate)(PET) is one of the most widely used materials in textile industry. It can have a low cost, silk-like handle, and excellent mechanical properties. Low thermal stability of PET had been a common problem limiting its high temperature application. The polyester have been known to have the disadvantage of degradation under ionized irradiation compared to crosslikable polymers such as polyethylene, polypropylene and polystyrene. To improve thermal stability of PET, the PET films were photocrosslinked by UV irradiation. A hydrogen-abstractable photoinitiator was used to photocrosslink of PET by continuous UV irradiation. Photoinitiator addition increased the gel fraction. The photocrosslinking was attributed to the recombination of PET radicals generated upon UV irradiation, which was enhanced by the hydrogen abstraction of the PET polymer chains by the added photoinitiator. Also the crosslinked PET showed higher thermal stability and mechanical strength with increasing UV energy. Polyester type films such as poly(ethylene naphthalate)(PEN) and poly(butylene terephthalate)(PBT) were also increased the gel fraction and improved thermal stability and mechanical properties by UV irradiation.

Reference

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