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Surface Nano-Structure of Polyamide 6 Film by Hydrothermal Treatment

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Abstract

Polyamide 6 (PA 6) melts and dissolves in super-heated water when $T > 160$ °C. Commercial PA 6 films were treated in super-heated water at 140 °C $< T < 160$ °C, i.e. below melting. Morphology, thermal behavior, mechanical properties, oxygen permeability and transparency of the film before and after hydrothermal treatment are investigated. After hydrothermal treatment, the melting temperature, crystallinity, elongation at break and toughness increase, whereas the strength decreases. The transparency and oxygen permeability decrease slightly. More interestingly, the

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