

Synthesis and characterization of colorless polyimide with new diamine

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We synthesized a new diamine which has flexible ether bonds by nucleophilic substitution reaction. Using new diamine, colorless polyimide (CPI) films were synthesized. CPIs with the new diamine were synthesized by same dianhydride (4,4'-(hexafluoroisopropylidene)-diphthalic) and different diamines which have sulfone or tri-fluoro groups. The synthesis of the new diamine and CPI films was confirmed by NMR and FT-IR measurements. The effect of the new diamine on flexibility of films was confirmed by residual stress measurement. The decrease in residual stress at room temperature and the glass transition temperature of CPI films revealed flexibility of a new diamine. Especially, in the case of CPIs with a bulky and rigid structure, the effect of a new diamine was significant. Thermal properties and optical properties were also characterized.