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Thermally stable, organosoluble of co-polynaphthalimides based on 1,4,5,8-naphthalene tetracarboxylicdianhydride, 9,9-bis(4-aminophenyl)fluorine, and various aromatic diamines

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A series of novel co-polynaphthalimides (IIIa-h) were synthesized from 1,4,5,8-naphthalene tetracarboxylicdianhydride with 9,9-bis(4-aminophenyl)fluorine and its equimolar mixtures with various aromatic diamines by high-temperature solution polycondensation. Series III had inherent viscosity ranging from 0.77-1.17 dL/g, respectively. Most of the films were soluble in m-cresol and some of them were dissolve in 1-methyl-2-pyrrolidone (NMP). These polymers could afford transparent and tough films with Strength at Break of 77-100 MPa via casting relative m-cresol solutions. These PNIs also exhibited high thermal stability, with glass-transition temperatures of 218–239 °C, 10% weight loss temperatures above 500 °C in nitrogen or air, and char yields at 800 °C in nitrogen higher than 40%.

Biography

Yung-Chung Chen received a Chemical Engineering PhD degree in 2009 from National Chung Hsing University, Taiwan (under supervision of Prof. Ru-Jong Jeng). After three years of postdoctoral fellow at the Institute of Chemistry, Academia Sinica (under supervision of Prof. Jiann T. Lin), he joined DuPont as an R&D Chemist. Currently, he was appointed as an assistant professor at National Kaohsiung University of Applied Sciences. His current research interest is focused on synthesis and characterization of organic and polymeric materials including optical materials, organic solar cells, photoresist and polyimide.

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