

Poly(ester)s and poly(amide)s with fluorene and diphenyl-silane units in the main chain: Effects of iodine doping on the structure and electrical conductivity

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Intramolecular charge transfer interaction between the electron donor and electro acceptor units within the polymeric structure and its optoelectronic properties were studied. The monomer, 9H-fluorene-2,7-dicarboxylic acid, was prepared from 9H-fluorene-2,7-dicarbonitrile using CuCN/N,N-dimethylformamide followed by the decomposition of the complex with FeCl₃·6H₂O in HCl and KOH/H₂O. The formation of two new classes of polymers was reported at different reaction times. The poly(ester) (PEF) was synthesized by the reaction of the diacid monomer with bis(4-hydroxyphenyl) diphenylsilane using tosyl chloride/pyridine/dimethylformamide system as condensing agent. Alternatively, the poly(amide) (PAF) was synthesized by the direct polycondensation of the diacid monomer and bis(4-aminophenyl) diphenylsilane in N-methyl-2-pyrrolidone solution containing dissolved calcium chloride. The resulting new polymers were obtained in good yields and were characterized by FTIR, NMR (¹H, ¹³C, and ²⁹Si)