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New Polymer Syntheses Part 56: Novel Friedel-Crafts Polyketones Containing Naphthalene Moiety: Synthesis, Characterization and Antimicrobial Activity

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Abstract

Novel Friedel-Crafts polyketones containing naphthalene moiety were synthesized via the electrophilic Friedel-Crafts polycondensation method. The desired polyketones were obtained by the interaction of newly synthesized dinaphthylidenecycloalkanone monomers with different aliphatic and aromatic diacid chlorides. The structures of new monomers and polymers were confirmed by elemental and spectral analyses, besides X-ray single crystal data for the two new monomers. The new polyketones were characterized by solubility, viscometry, thermal properties, scanning electron microscopy and antimicrobial activity test. All the polyketones were soluble in formic acid as protonic solvent giving yellowish to brown colors. Some of the polyketones were partially soluble in n-hexane, benzene and chloroform. The thermal properties of those polymers were evaluated by TGA; DTG and DTA measurements. The desired polyketones have high thermal stability at T10 except polymer 3b which have low T10 value. FDT for all polyketones is nearly completed at around 522677 degrees C. The morphological properties of polyketone 2b were tested by SEM measurements. The synthesized monomers and polymers were screened for their antibacterial and antifungal activities. They showed a moderated antibacterial activity against tested Gram-negative and Gram-positive bacteria and no significant influence against the selected fungi species except monomer 1b and polymers 2a , 3b .

Keywords

Author Keywords: Friedel-Crafts; polyketones; synthesis; characterization; antimicrobial activity; naphthalene moiety

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