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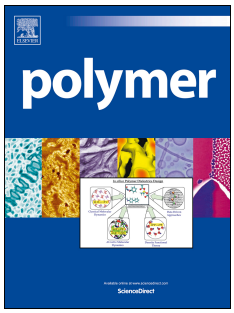

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Harry W. Gibson, Devdatt S. Nagvekar, Norimitsu Yamaguchi, Yadollah Delaviz, Jason W. Jones, Peter Balanda, Abaneshwar Prasad, Herve' Marand

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AROMATIC POLYESTERS DERIVED FROM 5,5'-DISUBSTITUTED BIS(*m*-PHENYLENE) CROWN) ETHERS

Harry W. Gibson,* Devdatt S. Nagvekar,‡ Norimitsu Yamaguchi, § Yadollah Delaviz,ℑ Jason W. Jones,¥ Peter Balanda,¶ Abaneshwar Prasad £ and Herve' Marand
Department of Chemistry
Virginia Tech
Blacksburg, Virginia 24061

ABSTRACT

A new monomer of the AB type, 5-carboxy-1,3-phenylene-5'-hydroxy-1',3'-phenylene-32-crown-10 (**5**), was synthesized. Direct polymerizations of bis(5-hydroxy-1,3-phenylene)-32-crown-10 (**13**), an AA diphenolic macrocyclic monomer, with BB diacid monomer bis(5-carboxy-1,3-phenylene)-26-crown-8 (**14**) and its larger analog bis(5-carboxy-1,3-phenylene)-32-crown-10 (**16**) were accomplished via the Higashi method. The resultant polyesters **15** and **17**, which both contain two macrocycles per repeat unit, were soluble in common organic solvents such as chloroform and tetrahydrofuran, amorphous in nature and possessed high thermal stability (5 % weight loss > 370 ^{o}C in air). Main chain poly(ester crown ether)s **18** and **19** based on bis(5-carboxy-1,3-phenylene)-32-crown-10 (**16**), and hydroquinone (HQ) and biphenol (BP), respectively, were synthesized; these two polyesters also possess high thermal stability (5 % weight loss > 386 ^{o}C in air) and are amorphous. These polymacrocycles are suitable polytopic hosts for complexation with 4,4'-bipyridinium derivatives, as demonstrated by the binding of paraquat diol (**21a**) by polyester **20** with K_a = 2.0 (±0.7) x 10^2 M^{-1} (23 ^{o}C, 4:6 w:w CD_3CN:$CDCl_3$). Threading of the cyclic units in these polyesters by linear polymers such as polystyrene and PMMA leads to compatiblized blends; this methodology represents a new approach to compatibilization.