

Alkali Metal Ion Coordination of Novel Poly(thiophene)s
3,4-Functionalized with Crown-Ether Moieties.
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New thiophenes carrying 18-crown-6-ether ring directly linked to the 3 and 4 positions of the thiophene ring were synthesized and polymerized by anodic coupling in acetonitrile.

The polymers are characterized by cyclic voltammetry, UV-vis and FTIR spectroscopy, MALDI mass spectroscopy and in-situ conductivity.

EQCM analysis of the alkali metal complexation ability of the 18-crown-6-ether polymer films in acetonitrile has evidenced that the complexation constants (e.g. 20-80 M⁻¹ for Na⁺) are ca 2 orders of magnitude lower than those of polythiophenes bearing the crown substituents pendant from the polythiophene backbone. The result has been ascribed both to electronic and solid-state effects of the conjugated polythiophene chains.