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AROMATIC CONDUCTING POLYMERS.(U)
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TECHNICAL REPORT NO. 1

Aromatic Conducting Polymers

by

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Aromatic Conducting Polymers (Contract #N00014-80-C-0756)

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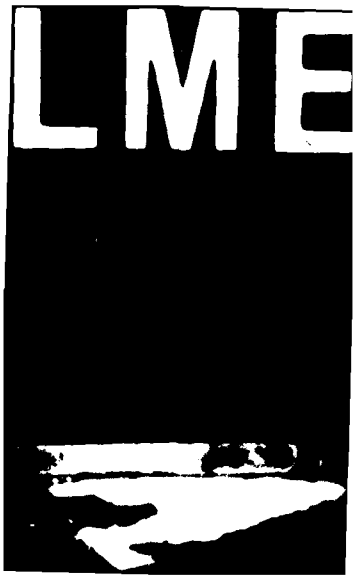
Interests in electrically conducting polymers have grown from polyacetylene to other polymers. One of the objectives of this research project, initiated this year, is in elucidating structure-conductivity relationships for new aromatic polymers.

The following model compounds and polymers have been synthesized: poly(2,5-dimethoxy-phenylene-vinylene), para-trans-trans-distyrylbenzene, meta-trans-trans-distyrylbenzene, trans-poly(phenylene-vinylene) both by Wittig reaction and by NaH synthesis, cis- and trans-poly(phenylene-vinylene) also by both methods, trans-1,4-bis-4-phenylbutadienylbenzene, cis- and trans-1,4-bis-4-phenylbutadienylbenzene, poly-(p-diethynylbenzene) of 4 different molecular weights, poly(m-diethynylbenzene), poly-(m-phenylene-vinylene), poly(m- and p-phenylene-vinylene) and trans-stilbene.

Conductivity of the above materials had been obtained before and after AsF_5 doping. The conducting properties are related to: (1) cis, trans structure, (2) molecular weight, (3) method of synthesis, (4) meta and para substitution, and (5) bond alteration.

The formation of radical cations upon AsF_5 doping and subsequent chain extension in these materials are studied by electron paramagnetic resonance for linewidth, g-values, spin concentration and their temperature dependence.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