

perfection; and (3) making the transition from single chain to lattice calculations of electronic properties.

Justification

Property improvements and increased understanding of inherent properties of conducting polymer are expected.

Status

Existing conducting polymers are grossly defective and non-uniform from molecular to micron scales. This structural disorder frustrates properties optimization and the development of fundamental materials understanding.

Research Proposed

(1) Utilize solid-state reactions, epitaxial growth, reactions in ordered host media, simultaneous polymerization and crystallization, and post-synthetic processing to obtain materials having improved perfection. If possible, well characterized, standardized samples should be identified and made available to all workers at a research level.

(2) Expand efforts to derive structure-property relationships for conducting polymers using molecular charge transfer complexes (which are obtainable as single crystals) as model compounds.