Research Proposed

1. Many novel structures remain unsynthesized. Some of the potential structures could be intrinsic conductors.

2. Besides linear polymers, some of these systems could generate helical polymers which may become electromagnetic.

3. Many of the syntheses should lead to well defined structures. Structural characterization should be easier than for polyacetylenes, and should be important for understanding properties.

4. As the systems develop, characterization of the electrical properties will become very important, first empirically and later theoretically for the important systems.

1.4 Summary

Heterocyclic conducting polymers have wider structural variety than carbocyclic polymers. They can be readily synthesized. Both preformation and direct electrosynthesis have been used and many types of conducting and semiconducting materials have been made. In general, these polymers are air and water stable and many are very themally stable. This is a great advantage compared to many other conducting polymers. Some double stranded, ladder, heteroaromatic polymers have been made and many more could be made. They could have qualitatively different properties from the standard single stranded polymers. One could have conduction along the chain as well as carrier exchange between chains with such polymers.