

## SYNTHESIS AND MESOGENIC PROPERTIES OF POLY [5,5- DIQUINOLYLMETHANE SEBACATEL]

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**ABSTRACT:** A new thermotropic liquid crystal polymer, poly [5,5- diquinolylmethane sebacatel], was synthesized, and its thermal and mesogenic properties were studied by differential scanning calorimetry, by differential thermal analysis, by use of a hot stage on a polarizing microscope, and by electron spin resonance technique. These studies reveal that this polymer exhibit only a nematic mesophase.

### INTRODUCTION

Polymers incorporating mesogenic groups in the main chain, separated by flexible spacers are of considerable interest because their phase transition temperatures are considerably lower than those in which the mesogenic groups are bound directly to each other or through a rigid, non mesogenic unit<sup>1</sup>. Recently several polymers of this kind have been prepared and studied<sup>2-9</sup>. To our knowledge, there are no papers which describe thermotropic liquid Crystal polymers containing quinoline derivatives as mesogens.

Therefore it was decided to prepare a new type of thermotropic liquid crystal polymer which is composed of quinolines and aliphatic spacers, because it is expected to form stable liquid crystal mesophases at reasonably low temperature. The mesogenic properties of the synthesized polymer were examined using thermal analysis, electron microscope and electron spin resonance techniques.

### EXPERIMENTAL

#### Preparation of monomer

The 8,8- dihydroxy-5,5- diquinolylmethane (A) was synthesized from reaction of (0.66) mole of 8-hydroxy quinoline and (0.22) mole of p-formaldehyde in (50) ml glacial acetic acid. The mixture was stirred, heated gradually to 90°C, and a mixture of conc. H<sub>2</sub>SO<sub>4</sub>/glacial HAC with a volume ratio of (0.5/2.5) was added dropwise to the reaction mixture. The reaction mixture was

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