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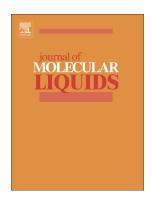
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Benzimidazole based Mesogenic Schiff-Bases: Synthesis and characterization

Ragini Dubey, Rajasekhar Yerrasani, Karunakar M., Angad Kumar Singh,

Rupali Gupta, Vellaichamy Ganesan and T. R. Rao\*

Department of Chemistry, Banaras Hindu University, Varanasi-221 005, India

Email: drtrrao@gmail.com

**Abstract** 

Two homologous series of mesogenic Schiff-bases, N-4-((alkoxy)-(phenyl-3-hydroxy-

4-(4-(5-methylbenzimidazol))-2-alkoxysalisylaldimine)benzoate (7a-d) and N-4'-(5-methyl-

benzimidazole)-phenyl-4-alkoxysalisylaldimine (8a-d) incorporating benzimidazole moiety

have been prepared and the molecular structures studied by FT-IR, NMR and ESI-MS

spectrometry. Mesogenic behaviour was investigated by polarizing optical microscopy

(POM), differential scanning calorimetry (DSC) and variable temperature powder X-ray

diffraction (PXRD) techniques. Changing the spacer (ester-linked to non-ester linked) of the

Schiff-base results in enhancement of thermal stability and phase transition temperature. The

members of series-I show monotropic SmA while those of series-II reflect enantiotropic SmA

mesomorphism. An electrochemical study of a representative Schiff base in each series (7d

and 8c) showed an electrical band gap 1.26 eV and 1.22 eV respectively.

Keywords: Liquid crystal, Benzimidazole, Schiff-base, SmA

1. Introduction

Liquid crystals are self assembled dynamic functional soft materials having both order

and mobility at molecular, supramolecular and macroscopic levels; thus, they are fascinating

materials in many areas of applied science<sup>1</sup>. It is believed that mesomorphic behaviour of an

organic compound can be varied by modifying its molecular structure<sup>2-4</sup>. Recently, there has

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