



## Optical Anisotropy of Space Charge and Activation Energy Studies on Cholesteric to Smectic Phases

**T. N. Govindaiah\***

Post-Graduate Department of Physics, Government College (Autonomous), Mandya-571401, **INDIA**  
Email: [tngovi.phy@gmail.com](mailto:tngovi.phy@gmail.com)

Accepted on 2<sup>nd</sup> November, 2020

---

### ABSTRACT

*Optical phase transition studies on binary mixtures of cholesterol isobutyl carbonate (CIB) and 4-(trans-4'-hexylcyclohexyl) isothiocyanatobenzenes (6CHBT) molecules exhibits spherulitic texture of cholesteric and induced chiral smectic phases. Mixtures of different concentrations of cholesteric material in accordance to the sequence: when the temperature of the molecules in its isotropic phase is brought down to a cooler temperature. The space charge relaxation time and activation energy of given molecules are estimated with the help of thermal basis of electrical conductivity and dielectric parameters.*

### Graphical Abstract



Microphotographs obtained in between the crossed polars.

**Keywords:** Conductivity, Dielectric parameters, Space charge relaxation, Activation energy.

---