



Contribution ID: 63

Type: oral presentation

Helical structure of liquid crystals tested by spectroscopy methods

Tuesday 4 July 2017 12:30 (30 minutes)

Chiral liquid crystals form macroscopic helicoidal structure. It is characterized by two parameters: the value of helical pitch and the helical twist sense (handedness). Spectroscopy methods let measure both of these parameters. The helical pitch can be measured actually by different methods, but the most popular method uses UV-Vis-IRspectrophotometers. The idea of measurement is based on the selective reflection of the light from macroscopic structure. The handedness is measured by polarimetry technique. The used detector can be simply human eyes but more sophisticated method uses UV-Vis-IRspectrophotometers. In our laboratory liquid crystal compounds which show the change of helical twist sense upon temperature were found [1-3]. At lower temperature the macroscopic structure is right handed and helical pitch increases with temperature. At higher temperature the macroscopic structure is left handed and helical pitch decreases with temperature. In between the unwinding of the helicoidal structure is observed. This behavior can be confirmed by Electronic Circular Dichroic Spectrophotometry (ECD) as well as by Vibrational Circular Dichroic Spectrophotometry (VCD) [4]. The results of IR, ^1H NMR and ^{13}C NMR will be also presented.

References

1. M.Tykarska, M.Czerwiński, M.Żurowska, *Liq. Cryst.*, **38**(5), 561-566 (2011).
2. M. Żurowska, R. Dąbrowski, J. Dziaduszek, K. Garbat, M. Filipowicz, M. Tykarska, W. Rejmer, K. Czupryński, A. Spadło, N. Bennis, J.M. Otón, *J. Mater. Chem.*, **21**, 2144-2153 (2011).
3. M. Czerwiński, M. Tykarska, *Liquid Crystals*, **41**(6), 850-860 (2014).
4. M. Tykarska, M. Czerwiński, *Liquid Crystals*, **43**(4), 462-472 (2016).

Primary author: Mrs TYKARSKA, Marzena (Military University of Technology)

Presenter: Mrs TYKARSKA, Marzena (Military University of Technology)

Session Classification: Soft Matter

Track Classification: Soft matter and glass formers