

Structural and orientational features in ferroelectric SmC* phases studied by means of ²H and ¹³C NMR spectroscopy

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²H NMR measurements [1] have been applied to several ferroelectric smectogens selectively labelled with Deuterium nucleus in different sites of the aromatic core. Several geometrical angles characterizing the core structure as well as the temperature dependence of the local order parameters were determined in a self consistent way and they were found to agree with those determined by independent ¹³C NMR studies. Moreover, NMR provides information about structural features of the SmC* phases, such as the tilt angle as a function of temperature and the behaviour of the helical supramolecular structure of in the presence of the external magnetic fields [2].

In this work, several calamitic compounds (**ZLL 7/*** [3,4], **M10/**** [5], **H10/8**) having various ferroelectric phases – namely the paraelectric *SmA*, the ferroelectric *SmC** (short and wide ranges), the antiferroelectric *SmC*_A*, the re-entrant ferroelectric *SmC*_{re}* and the ferroelectric *hexatic* phases – will be investigated by means of a new combined multinuclear spectroscopy and *ab initio* calculations approach [4]. The aim is to derive structural, orientational order and magnetic properties of the above mentioned chiral ferroelectrics compounds.

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