

Liquid-crystalline properties of aqueous suspensions of natural clay nanosheets

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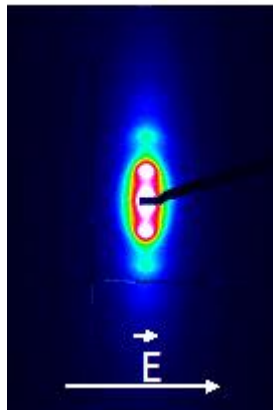
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Clay minerals, like beidellite or nontronite, spontaneously exfoliate in water and form colloidal suspensions of nanosheets. In a given range of concentration, these suspensions display a nematic liquid–crystalline phase whose structure and properties were studied in detail by polarized-light microscopy and small-angle X-ray scattering (SAXS). The colloidal nematic phase shows the classical properties of usual nematics, such as surface anchoring and electric-field and magnetic-field alignment. [1] Thus, nematic single domains can easily be produced. In addition, the isotropic phase also displays strong electro-optic effects in moderate electric fields, which could be interesting for applications. The extension of such studies to suspensions of other types of nanosheets



SAXS pattern of a nematic beidellite suspension aligned in a 4×10^4 V/m, 700 kHz horizontal electric field.

References:

[1] E.Paineau et al, *Liquid Crystals Reviews*, **1**, 110 (2013).

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