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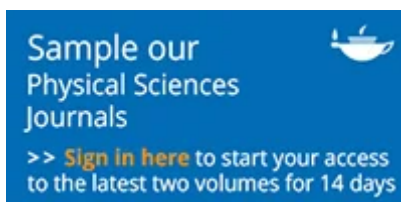
# Study of the Cholesteric-to-Cholesteric Phase Transitions on the Lyotropic Mixture of KL/K<sub>2</sub>SO<sub>4</sub>/1-Undecanol/Water/Brucine Presenting the Cholesteric Biaxial Phase

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## Abstract

Lyotropic cholesteric liquid crystalline phases were prepared by doping the quaternary mixture of potassium laurate (KL)/potassium sulfate (K<sub>2</sub>SO<sub>4</sub>)/1-undecanol (UndeOH)/water with brucine. The phase diagram was constructed as a function of the brucine concentration. Three cholesteric phases were identified:

cholesteric biaxial, calamitic uniaxial, and discotic uniaxial. It was observed that there is a critical brucine concentration ( $X^*_b$ ) to cholesterize the nematic host phase

when the mixture is confined in a thin sample holder, below which the cholesteric helical arrangement is not achieved. The helical twisting power of brucine was calculated as  $12.12 \pm 0.40 \mu\text{m}^{-1}$ .

**Q Keywords:** Lyotropic liquid crystal   cholesteric phases   phase transition   brucine  
helical twisting power   intrinsically biaxial micelles model

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