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A viscometric study of the liquid crystalline phase of alkyloxybenzoic acids

Kucherepa N., Samigullin F., Malatsion S., Rodnikova M., Syrbu A.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The viscosities of three benzoic acid derivatives (p-n-heptyloxy-, p-n-decyloxy-, and p--dodecyloxy-) were measured on a unique viscometer of the class of CS-rheometer-viscometers with controlled shear stress over the whole temperature range of the liquid crystalline state. Shear rates were calculated and flow and viscosity curves constructed from the experimental shear stress values taking into account the Rabinovich-Moony correction. The smectic and nematic phases were characterized by non-Newton and Newton viscosities, respectively, in all the samples studied. The activation parameters of viscous flow were calculated for Newton viscosity. The results are discussed in terms of intermolecular interactions and structural peculiarities of liquid crystalline phases. © 2009 Pleiades Publishing, Ltd.

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