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AEO-9体系溶致液晶性能及其组成方程

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摘要 以非离子表面活性剂十二烷基醇聚氧乙烯醚(AEO-9)/正丁醇/正辛烷/水组成的四元体系为研究对象，绘制了拟三元相图。在液晶区选取样品点，拍摄纹理照片，
并结合^2HNMR谱图确定了液晶类型其中主要是状液晶。利用小角X射线衍射测定了层状液晶的层间距d，得到层间距d和液晶含水量的关系。根据层状液晶结构的特点，推导出层状液晶组成方程，
并对本体系进行了验证。结果表明，
根据议程计算出的液晶区域的开头和位置与实验测得的相图中液晶的开头和位置基本相同，
为实际应用提供了依据。

关键词 溶致液晶 纹理 二维核磁共振 表面活性剂 聚氧化乙烯 丁醇 辛烷 多元体系 相图

分类号 0642

Study of lyotropic liquid crystal containing nonionic surfactant of AEO-9

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Abstract Lyotropic liquid crystal from nonionic surfactant (AEO-9)/n-octane/n- butanol/water were studied at 20℃ to determine the phase regions and obtain some typical photographs by using microscope with polarized- light. The ^2H NMR methods were used to determine the exact liquid crystals' structure. It was found that the structure varied from mixed W/O type microemulsions and lamella liquid crystals through single lamella liquid crystals, mixed lamella and hexagonal liquid crystals, to O/W type microemulsion in the liquid crystal region with the addition of water. The geometrical dimensions were determined by small angle X-ray diffraction. For this lamella liquid crystal the results indicated a linear increase in interlayer spacing with addition of water and a pronounced decrease with addition of AEO-9 in the system. The data of interlayer spacing were obtained and then calculated the ratio of oil layer and water, which ranged from 0.1 to 0.6. On the basses of characteristic and composition of lamella liquid crystal, the liquid crystal forming equation is introduced for the first time, and its position and region shape could also be determined in the pseudo-ternary phase diagrams. The result could proven by experiment.

Key words LYTROPIC LIQUID CRYSTAL SURFACTANTS POLYETHYLENE OXIDE BUTANOL OCTANE MULTICOMPONENT SYSTEM PHASE DIAGRAM

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