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DNA分子在气液界面的组装相变特性及其LB膜结构研究

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摘要 对十八胺与DNA在气液界面上组装及其相变过程进行了研究，利用AFM观察了不同压力下转移的DNA复合LB膜结构。发现在低表面压时，DNA复合单分子膜表现为技术发散的分形结构；随着压力的升高，DNA复合膜逐渐由紧密的网状排布结构变为团聚的块状和团簇结构。表明通过调节膜压，可使膜内DNA分子的构象发生大的变 化，从而生成具有特定形态的二维纳米图案。这种具有特殊形态和结构的DNA LB膜可望为合成新型生物纳米结构有序功能体系提供模板。

关键词 十八胺 脱氧核糖核酸 相变 原子力显微镜 LB膜

分类号 0642

Studies on Interfacial Properties of DNA Langmuir Monolayers at Air/Water Interface and Structural Properties of DNA LB Films

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Abstract Interfacial properties and organization process of DNA/octadecylamine (ODA) mixed Langmuir monolayers at die air/water interface were investigated. The morphology and structure of transferred DNA/ODA mixed LB film were observed using AFM. It was found that fractal domains appeared in the mixed films at low surface pressure. At higher pressure, the domain changed from network structure to aggregated clusters. Several kinds of DNA LB films with patterned surfaces and specific structures were prepared. It provides a good template for the fabrication of complex nanoscale devices.

Key words octadecylamine DNA PHASE TRANSFORMATION AFM Langmuir-Blodgett FILMS

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