

## 材料物理和化学

## 含氟联苯乙炔液晶化合物的合成及其低温性能

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摘要: 合成了高双折射率、低黏度的含氟联苯乙炔类液晶系列化合物(VI),这些化合物经过IR、<sup>1</sup>H-NMR、<sup>13</sup>C-NMR、<sup>19</sup>F-NMR、<sup>1</sup>定分子结构正确,其液晶相态经过DSC和POM测定,并测试分析了它们的折光率在不同温度下的黏度行为。实验结果表明,该类液晶折射率可达0.32以上;与其他结构相当的炔类化合物相比,具有较低的低温黏度以及较小的温度依赖性。这些特性有利于降低液晶材料提高响应速度。

关键词: 烷基含氟联苯乙炔类化合物 合成 低温黏度 高双折射率液晶

## Synthesis and Low-Temperature Properties of Lateral Difluoro-Diphenyltolane Compounds

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Abstract: The lateral difluoro-diphenyltolane compounds (VI) with low viscosity, high birefringence were synthesized. Their structures were determined by IR, <sup>1</sup>H-NMR, <sup>13</sup>C-NMR, <sup>19</sup>F-NMR and MS. The transition temperature of liquid crystal phase and phase states were measured by DSC and POM. Their birefringence and viscosities at different temperature were also tested and analyzed. Experimental results show that the compounds synthesized exhibit birefringence ( $\Delta n \approx 0.32$ ), have lower viscosities and smaller temperature dependence at low temperature, compared with the other relative structure of tolane compounds. These compounds are particularly attractive for reducing viscosity of liquid crystal materials and achieving fast response times in LCD.

Keywords: alkyl lateral difluoro-diphenyltolane compounds synthesis low viscosity at low temperature high birefringence

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