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寡聚噻吩取代的**9,9'**-螺二芴的合成和表征

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摘要 以四种溴化的9,9'-螺二芴为原料，设计合成了一系列新型的寡聚噻吩取代的9,9'－螺二芴。其结构均经1^H,13^CNMR,MS,FT-IR或元素分析确证。通过核磁工振氢谱分析，
我们对该类化合物芳环质了的化学位移进行了归属。热重差热分析表明，由于螺二芴的引入，
该类化合物具有较高的玻璃化转变温度和明显改善的无定型性。初步的光学性能研究表明，
该类化合物寡聚噻吩相比，其荧光效率明显增强，并且随着寡聚噻吩与螺二芴连接位置的不同，
其光学性能也有明显差异。

关键词 噻吩P 寡聚噻吩 螺二芴 光学材料 质子磁共振谱法 碳13核磁共振谱法 质谱法 付里叶变换 红外分光光度法 热重量分析 光学性质

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Synthesis and characterization of oligothiophene-modfied spirobifluorene

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Abstract A series of novel 9,9'-spirobifluorenes functionalized by non- substituted oligothiophenes were synthesized through a coupling reaction between the oligothienyl-zinc chloride and the brominated spirobifluorene. The core is a 9,9'-spirobifluorene and all the branching arms are affixed to the core in a single operation, which makes the syntheses highly convergent. The tetrahedral bonding atom at the center of a spiro-annulated molecule maintains 90℃ angle between the connected conjugated moieties via a σ-bonded neteork, which is useflu to modify the steric demand of small molecular compounds to improve their processibility and morphologic stability, with their electronic properties maintained. Contrary to the non- substituted α-oligo-thiophenes, which naturally intend to crystallize, the oligothiophene modified 9,9'-spirobifluorenes were found to readily form amorphous glasses at ambient temperature and to exhibit high morphologica stability with high glass transition temperatures ranging from 101℃ to 186℃. This series of materials also kept the good properties of oligothiophenes, such as the easy accessibility through various synthetic methodologies, good chemical and thermal stability, as well as the tunable energy levels and the emission color.

Key words THIOPHENE P OPTICAL MATERIAL PROTON MAGNETIC RESONANCE SPECTROMETRY C13 NMR SPECTROMETRY MASS SPECTROGRAPHY FOURIER TRANSFORM INFRARED SPECTROPHOTOMETRY THERMOGRAVIMETRY OPTICAL PROPERTIES

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