

研究简报

聚缩醛螺胞二醚的合成及结构表征

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摘要 在I₂催化剂的作用下, 利用苯甲醛与季戊四醇反应, 制备了聚缩醛螺胞二醚的模型化合物3,9-二苯基-2,4,8,10-四氧杂螺[5.5]十一烷(**1**). 在此基础上, 利用1,3-苯二甲醛与不同摩尔比的季戊四醇合成了化合物1,3-二(2,6-二氧杂-4,4-二羟甲基环己基)苯(**2**)和2,4,8,10-四氧杂-3,9-二(3'-甲酰基苯基)螺[5.5]十一烷(**3**). 化合物**2**与化合物**3**

反应, 制成标题化合物聚缩醛螺胞二醚**4**, 收率为95.4%. 用FTIR, ¹H NMR对化合物**1**~**4**的结构进行了表征.

发现在含有手性轴化合物**1**, **3**, **4**的¹H NMR谱中, 4个亚甲基中的8个氢原子裂分为4组双峰, 而不含有手性轴化合物中的4个亚甲基中的8个氢原子不裂分, 是个单峰. 这种不同不是由于化合物中刚性环所致, 而是由于有无手性轴造成的.

关键词 [3,9-二苯基-2,4,8,10-四氧杂螺\[5.5\]十一烷](#) [1,3-苯二甲醛](#) [季戊四醇](#) [聚缩醛螺胞二醚](#)

分类号

Synthesis and Structure Characterization of Poly-acetal-spiro-vic-diether

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Abstract In the presence of I₂, the model compound 3,9-diphenyl-2,4,8,10-tetraoxa-spiro[5.5]undecane (**1**) was prepared by the reaction of benzaldehyde with pentaerythritol. The reaction of 1,3-benzodialdehyde with different equivalent of pentaerythritol afforded 1,3-di(2,6-dioxa-4,4-dihydroxymethyl-cyclohexyl)- benzene (**2**) and 2,4,8,10-tetraoxa-3,9-di(3'-formylphenyl)spiro[5.5]undecane (**3**), respectively. The title compound poly-acetal-spiro-vic-diether (**4**) was synthesized in 95.4% yield by the reaction of **2** with **3**. The structures of compounds **1**, **3** and **4** were characterized by FTIR and ¹H NMR. In the ¹H NMR spectra, the signals of eight hydrogen atoms of methylene groups in chiral axis-containing compounds **1**, **3** and **4** were split into four groups of the doublets, but the corresponding signal of the hydrogen atoms was a single peak in compounds **5** and **6** un-containing chiral axis. This difference was not due to the presence of rigid cycle but the presence of chiral axis.

Key words [3,9-diphenyl-2,4,8,10-tetraoxa-spiro\[5.5\]undecane](#) [1,3-benzodialdehyde](#) [pentaerythritol](#) [poly-acetal-spiro-vic-diether](#)

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