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## 论文

### 1,8-二(2-吡咯酰胺)-3,6-二氯咔唑的合成、晶体结构及阴离子识别研究

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#### 摘要:

设计并合成了1,8-二(2-吡咯酰胺)-3,6-二氯咔唑化合物(1), 利用X射线单晶衍射研究了该化合物的固态结构. 利用荧光和紫外-可见光谱技术及<sup>1</sup>H NMR滴定法研究了其对阴离子的识别. 研究表明, 化合物1对H<sub>2</sub>PO<sub>4</sub><sup>-</sup>离子有较强的识别能力, 且对H<sub>2</sub>PO<sub>4</sub><sup>-</sup>离子有明显的荧光增强效应, 可用来识别H<sub>2</sub>PO<sub>4</sub><sup>-</sup>离子. 同时<sup>1</sup>H NMR滴定结果显示, 化合物1在阴离子识别过程中发生了构型转化.

关键词: 1,8-二(2-吡咯酰胺)-3,6-二氯咔唑; 晶体结构; 阴离子识别

### Synthesis, Crystal Structure and Anion Recognition of 1,8-Di(pyrrole-2-carboxamino)-3,6-dichlorocarbazole

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#### Abstract:

Due to the fundamental roles that anions play in a wide range of chemical and biological processes, numerous efforts have been devoted to the design of receptors capable of selectively binding and sensing anions. Herein, carbazole derivative (1) bearing two model amides was synthesized by coupling 1,8-diamino-3,6-dichlorocarbazole with pyrrole-2-carbonylchloride in the presence of triethylamine. The structure of compound 1 was characterized by X-ray crystallography. The anions recognition of the compound 1 was studied by the UV-Vis and fluorescent spectra method in highly polar solvent of DMSO. The results show that strong anion binding is observed for H<sub>2</sub>PO<sub>4</sub><sup>-</sup>. Obvious fluorescence "switched on" behavior is observed upon addition of H<sub>2</sub>PO<sub>4</sub><sup>-</sup> to receptor 1, which can be used to discriminate H<sub>2</sub>PO<sub>4</sub><sup>-</sup> from the other anions. <sup>1</sup>H NMR analysis revealed that all the five NH of receptor 1 were involved in the hydrogen bonding interactions with the anions leading to a conformation exchange during the anion binding.

Keywords: 1,8-Di(pyrrole-2-carboxamino)-3,6-dichlorocarbazole; Crystal structure; Anions recognition

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#### 参考文献:

- [1]Gale P. A.. Coord. Chem. Rev.[J], 2000, 199: 181—233
- [2]Beer P. D., Gale P. A.. Angew. Chem. Int. Ed. Engl.[J], 2001, 40: 486—516
- [3]Sessler J. L., Davis J. M.. Acc. Chem. Res.[J], 2001, 34: 989—997
- [4]Gale P. A.. Acc. Chem. Res.[J], 2006, 39: 465—475
- [5]Gale P. A.. Chem. Commun.[J], 2008: 4525—4540

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- [6]Caltagirone C., Gale P. A.. Chem. Soc. Rev.[J], 2009, 38: 520—563
- [7]Chmielewski M. J., Charon M., Jurczak J.. Org. Lett.[J], 2004, 6: 3501—3504
- [8]Connors K. A.. Binding Constants: the Measurement of Molecular Complex Stability[M], New York: Wiley, 1987: 141—167
- [9]Chen Q. Y., Chen C. F.. Eur. J. Org. Chem.[J], 2005: 2468—2472
- [10]Zielinski T., Kedziorek M., Jurczak J.. Chem. Eur. J.[J], 2008, 14: 838—846
- [11]Wu F. Y., Li Z., Wen Z. C., *et al.* Org. Lett.[J], 2002, 4: 3203—3205
- [12]Kim S. K., Singh N. J., Kim S. J., *et al.* Org. Lett.[J], 2003, 5(12): 2083—2086
- [13]Watanabe S., Onogawa O., Komatsu Y., *et al.* J. Am. Chem. Soc.[J], 1998, 120(1): 229—230
- [14]YIN Zhen-Ming(尹振明), YANG Wen-Zhi(杨文智), HE Jia-Qi(何家骐), *et al.* Chem. J. Chinese Universities(高等学校化学学报)[J], 2004, 25(7): 1260—1263
- [15]YANG Wen-Zhi(杨文智), YIN Zhen-Ming(尹振明), HE Jia-Qi(何家骐), *et al.* Chem. J. Chinese Universities(高等学校化学学报)[J], 2004, 25(12): 2269—2272

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