

國科會計畫

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異位調節感測器的設計與合成
The Design and Synthesis of Allosteric Sensors

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中文摘要

在先前的工作我們已經報導過利用醣氮冠醚與奈或蔥做成的螢光感測器，他們對一系列的金屬測試中有高的選擇性。在這裡我們利用先前的架構再將它加入硼酸基團來衍生設計及合成異位調節感測器。這種系統將是有用的，藉由金屬離子控制醣受體或是藉由醣來控制金屬離子，並且可作為新穎性高的異位調節醣辨識系統。感測器對於醣鍵結的訊息，可藉由螢光光譜及圓二極光譜變化的分析來獲得；同時金屬鍵結的訊息可藉由核磁共振光譜的滴定實驗來獲得。

關鍵字：異位調節；感測器；圓二極光譜；硼酸

Abstract

We have reported chemosensors built by sugar-aza-crown derivatives (furanoid-based) with pyrene or anthracene fluorophores in previous works. They have high selectivity toward heavy metal ions among a series metal ion tested. Herein, based on previous building blocks (metal-chelated chemosensors) we exploit to design and synthesize some types of allosteric sensors by adding the boronic acid moiety to above-mentioned chemosensors. Such system should be useful as a metal-controllable saccharide receptor or a saccharide-controllable metal receptor and act as a novel allosteric saccharide recognition system. The information of saccharide binding with specific groups of sensors can be obtained by analysis of changes in fluorescence and circular dichroism (CD) spectra. Meanwhile, the information of metal ions binding with another part of sensors can be observed by fluorescence spectra and NMR titration.

Key words : Allosteric; Sensor; Circular dichroism; Boronic acid