Naphthol-Based Macrocyclic Receptors

Liu-Pan Yang, Wei-Er Liu, Wei Jiang

PII: S0040-4039(16)30935-2
DOI: http://dx.doi.org/10.1016/j.tetlet.2016.07.077
Reference: TETL 47939

To appear in: *Tetrahedron Letters*

Received Date: 7 June 2016
Revised Date: 21 July 2016
Accepted Date: 25 July 2016

Please cite this article as: Yang, L-P., Liu, W-E., Jiang, W., Naphthol-Based Macrocyclic Receptors, *Tetrahedron Letters* (2016), doi: http://dx.doi.org/10.1016/j.tetlet.2016.07.077

ELSEVIER

Tetrahedron Letters
journal homepage: www.elsevier.com

Naphthol-Based Macrocyclic Receptors

Liu-Pan Yang[a,b], Wei-Er Liu[a], Wei Jiang[a*]

[a] *Department of Chemistry, South University of Science and Technology of China, No. 1088 Xueyuan Blvd, Nanshan District, Shenzhen, 518055, P. R. China.*
[b] *Dalian Institute of Chemical Physics, Chinese Academy of Science, Dalian, 116023, P. R. China.*

ARTICLE INFO

Article history:
Received
Received in revised form
Accepted
Available online

keywords:
macrocycle
naphthalene
host-guest chemistry
supramolecular chemistry
molecular recognition

ABSTRACT

Synthetic macrocyclic receptors are the primary workhorses in supramolecular chemistry. In particular, macrocyclic arenes are versatile receptors due to their special binding performances and wide applications. In this Digest, we discussed the recent advances on naphthol-based macrocyclic receptors, with special emphasis on the construction of naphthol-based molecular receptors with high guest binding ability and selectivity, and broad guest binding scope.

Content

1. Introduction

Macrocyclic receptors are the primary workhorses in supramolecular chemistry.[1] From the first generation of synthetic macrocycles - crown ethers[2] to cyclodextrins,[3] calixarenes[4] and cucurbiturils,[5] emergence of every new macrocyclic hosts pushed forward the development of supramolecular chemistry. Among artificial receptors, macrocyclic arenes based on aromatic rings occupy a pivotal position because of their special host-guest properties, easy synthesis and modification, and wide applications (Figure 1).[4, 6, 7] The most representative is certainly calixarenes,[4] the third generation of supramolecular hosts. Their unique molecular structure and conformational property permits their applications in a variety of supramolecular devices and materials.[8] The most recent one is pillar[*n*]arenes,[9] which is a new class of paracyclophanes made up of hydroquinone units linked by methylene bridges at *para* positions. During the last eight years, pillar[*n*]arenes have received considerable attention because of their interesting host-guest properties and applications in the construction of molecular machines, supramolecular amphiphiles, supramolecular polymers and other functional materials.[7] These macrocyclic arenes are often constructed by using phenol or its derivatives as the scaffold. Extension of phenol to large aromatic arenes, for example, naphthols, will certainly benefit and endow the resulting macrocycles with new properties: (i) The large π system may create a macrocycle with a deep or wide cavity; (ii) The fluorescent property of naphthalene endows the receptor with a natural capacity for sensing; (iii) the low symmetry of naphthalene may result in structural complexity of the corresponding macrocycles. In this Digest, we aim to

* Corresponding author. Tel.: +86-755-88018316; e-mail: jiangw@sustc.edu.cn.