

(PL-3)

Supramolecular Chemistry of Mixed Donor Macrocycles as Novel Functional Materials: A Crystallographic Approach

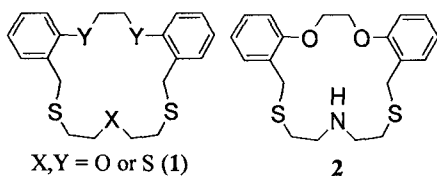
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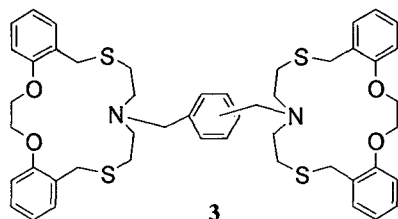
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We have synthesized a series of the S/O macrocycles (1) as well as S/O/N analogs (2), which allow us to prepare di-linked (3), fluorogenic (4), chromogenic (5) and multi channel probe (6) macrocycles, respectively. Self assembly of 1 – 3 with soft and/or heavy metal ions afforded supramolecular complexes with nano-sized discrete or continuous form. Continuing with the coordination study, 1 and 4 6 show the possibility as sensing materials in electro and optical signaling system. For example, the cation induced chelation enhanced fluorescence for 4 was observed. Interestingly, cation selective and anion controlled coloration for 5 were also observed.

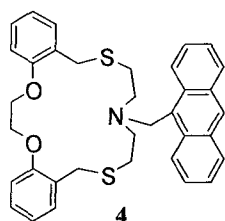
In this talk, our new findings by the crystallographic approach for the mixed donor macrocycles with extended structures are introduced in terms of supramolecular coordination chemistry as well as the applications in recognition devices. At the same time, the results may offer the possibility of the title compounds in the area of material sciences.

Macrocyclic system**Characteristics****- S/O and S/O/N macrocycles**

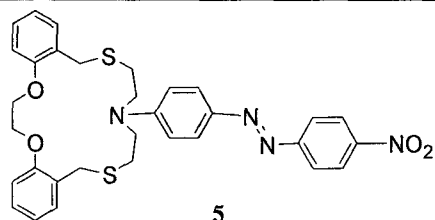
Supramolecular complexes with unusual stoichiometry
1- and 2-D coordination polymers
Hetero binuclear complexes
Extractant
Potentiometric sensor

**- N,N'-linked macrocycles**

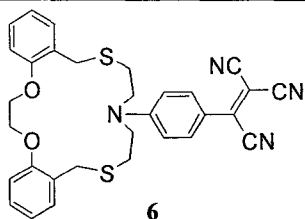
Homo binuclear complexes
Coordination polymers
Anion effect
Exo/endo coordination

**- Fluorogenic macrocycle**

Crystal structure (L)
Metal-induced CHEF effect
Selectivity (Al^{3+})

**- Chromogenic macrocycles**

Dye-macrocycles (red)
Cation-selective/anion-controlled color changes
Color-switching system

**- Triple-channel probe macrocycle**

Color probe
Fluorescence probe
Redox probe