

Analytical and biological applications of molecular nanocontainers



Speaker:

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Venue: B305 room, School of Science

Molecular nanocontainers enclose a well-defined cavity in which an appropriate guest molecule can be included or encapsulated. Inclusion forms a non-covalent structure known by host-guest complex. There are numerous applications that take advantage of encapsulation. One of the most well known is drug delivery. Encapsulation can be used to protect bioactive molecules against degradation, to increase their solubility and even to delivery the guests at desired locations. Encapsulation might also involve modification of a chemical/physical property of the guest, such as fluorescence, that can be followed quantitatively. In this case encapsulation can be used to quantify target guest molecules.

In this talk the use of cucurbit[n]uril ($n=7,8$) to encapsulate small molecules containing nitrogen and the detection of their host-guest complexes in the gas phase using ESI-MS will be briefly discussed. A more detailed discussion will focus on the detection of free and encapsulated molecules by natural receptors and on the quantification of amines by following their host-guest complexes. The encapsulation of caged compounds and their light activated release will also be discussed.