

Chemistry in a Capsule: Photochemistry in a Confined Space

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Host-guest chemistry has witnessed a renaissance under the name ‘supramolecular chemistry’ since the award of Nobel Prize to Cram, Lehn and Pederson. During the last five decades ‘supramolecular chemistry’ has enabled the visualization and exploitation of weak interactions toward altering the chemical and physical behavior of a molecule. It has aided in threading several concepts of host-guest chemistry that have existed for over a century. In general, the chemical and physical behavior of a molecule within a confined space is defined by the size and free space within the container, the dynamics of the content-container complex, weak interactions between the container and the content, and the content’s restricted freedom. $^1\text{H-NMR}$, EPR and fluorescence techniques enable one to probe the characteristics of a content-container complex. This lecture will present results of photochemical, photophysical, NMR and EPR studies of organic molecules included within a water-soluble cavitand trivially known as octa acid. These studies have provided information concerning dynamics of the complex, communication between free and caged molecules, and the features that control products distribution within a confined space.

