Hydrogen-bond based self-assembled supramolecular receptors formation and host-guest interactions in solution

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Self-assembled receptors based on Hydrogen Bonds ("double rosettes") are supramolecular entities capable of encapsulating alizarin and other related anthraquinone derivatives molecules acting as *"endo"* receptors for this type of small guest molecules.[1] The driving force for the encapsulation in these nanometer-sized supramolecular boxes is presumably π-π stacking between the electron-poor center ring of the anthraquinone derivatives and the relatively electron-poor melamine units of the receptor.[2]

We have recently developed a new class of double rosettes, decorated with long lipophilic alkyl chains, which are able to form liquid crystals.[3] Interestingly, in solution these receptors are also capable of forming complexes with alizarin and other related anthraquinone derivatives but through a different mechanism, which involves aggregation of the receptor with the guest being intercalated. This novel mode of complexation has been fully characterized by a combination of NMR experiments, including the use of T2 filters, NOESY, VT and PGSE NMR (using both DOSY and DECRA processing)[4].

References:

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