



Institut Ruđer Bošković

CXVI. Kolokvij Zavoda za organsku kemiju i biokemiju i
Sekcije za organsku kemiju Hrvatskog kemijskog društva



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Effects of inclusion in molecular containers: material science and drug delivery applications

Supramolecular complex formation of macrocyclic compounds has promising biological, pharmaceutical, and analytical applications. This type of processes is widely utilized in nanotechnology to develop molecular-scale devices, fluorescent probes and to increase the solubility of hydrophobic compounds. The talk focuses on the fundamental question how the molecular structure variation influences the kinetics and thermodynamics of inclusion in water-soluble cavitands. Representative examples will be presented for the versatile effects of host-guest binding. Encapsulation of alkaloids and photochromic compounds modified their photochemical behaviour. The confinement in the cavity of cucurbiturils altered fluorescent properties, hindered photooxidation, and protected guest molecules against nucleophilic attack. 4-Sulfonatocalixarenes not only provided binding sites but also induced nanoparticle formation. Temperature responsive system was designed to achieve reversible transformation between nanoparticles and supramolecular micelles.