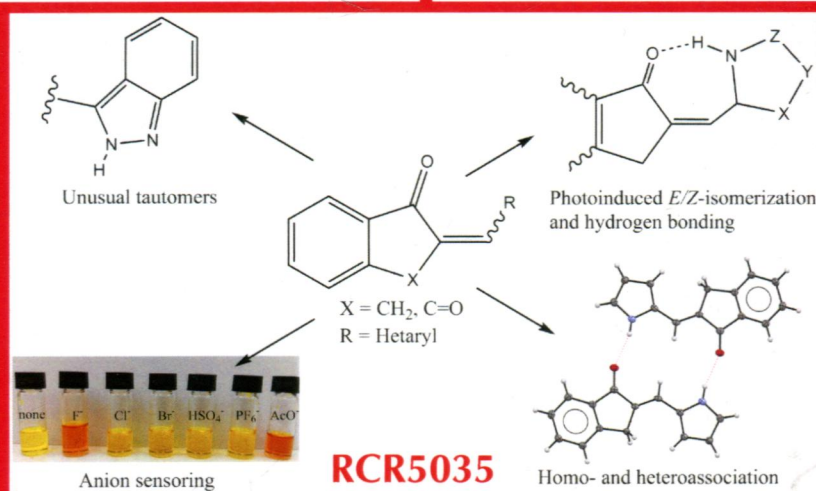
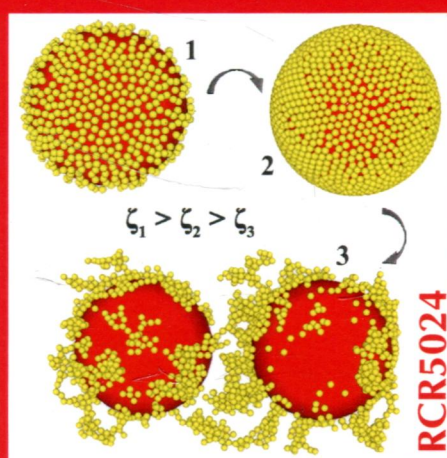
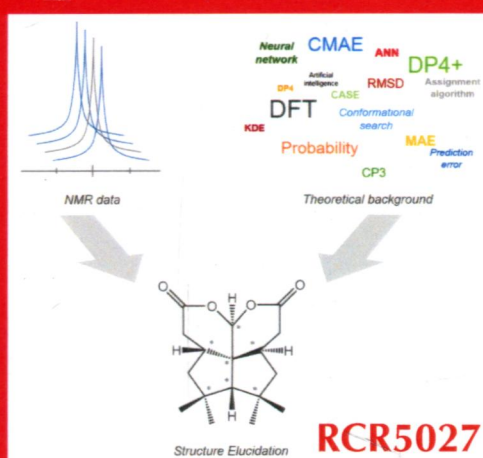


Успехи химии



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Pickering emulsions: structure, properties and the use as colloidosomes and stimuli-sensitive emulsions

RCR5024

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Pickering emulsions are emulsions that are stabilized with solid micro- and nanoparticles. These emulsions are in most demand for applications where the use of surfactants is restricted. The review addresses stabilization of Pickering emulsions. The attention is focused on the flocculation, coalescence, sedimentation and Ostwald ripening processes taking place in the emulsions. The structures formed by particles in the dispersion medium of the emulsion and in thin interlayers between droplets of the dispersed phase are analyzed. Methods for the production of colloidosomes, that is, microcapsules of aggregated particles, from Pickering emulsions are considered. These structures are promising for the encapsulation and prolonged release of active substances. Conversely, Pickering stimuli-sensitive emulsions provide intense release of encapsulated substances upon the change in the environmental parameters. This can be used not only in medicine and pharmacology, but also for the design of sensors, food industry, paint and varnish industry, petroleum production, etc.

Bibliography — 340 references.

Computational NMR of natural products

RCR5027

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This review generalizes diverse computational NMR studies of different natural products involving true alkaloids (indole, quinolizidine, pyrrolizidine, piperidine, indolizidine, quinoline, isoquinoline, indoloquinoline, and guanidine alkaloids), pseudoalkaloids (terpenes and steroids), quinones, lactones, lactams, flavonoids, and many others. The diverse computational protocols employed in each particular case are thoroughly discussed with a special emphasis on their structural and stereochemical applications.

Bibliography — 165 references.

H-bonding-assisted transformations of cyclic chalcones: E/Z-isomerization, self-association and unusual tautomerism

RCR5035

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Condensation of 1- or 2-indanones and 1,3-indandiones with aromatic or heteroaromatic carbaldehydes gives products that demonstrate various transformations and effects of general interest for organic chemistry. In the present review, phenomena such as tautomerism, E/Z-isomerization, π -conjugation, hydrogen bonding, and homo- and heteroassociation are considered. The relative stability of various isomers of cyclic chalcones is shown to be determined by the intramolecular hydrogen bonding in their molecules and the formation of associates. The same effects also result in the formation of unusual, otherwise unstable tautomers, such as 2H-indazoles. The hydrogen-bonding-assisted keto-enol and E/Z-isomerization are analyzed. A novel, specific type of conjugation for the studied compounds was proposed and termed 'roundabout' conjugation.

Bibliography — 101 references.