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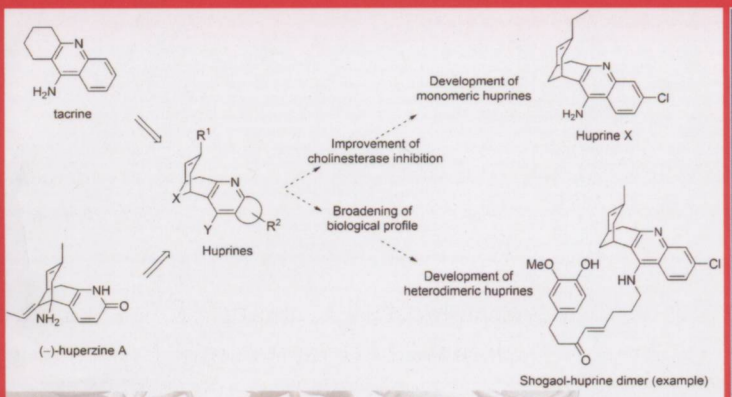

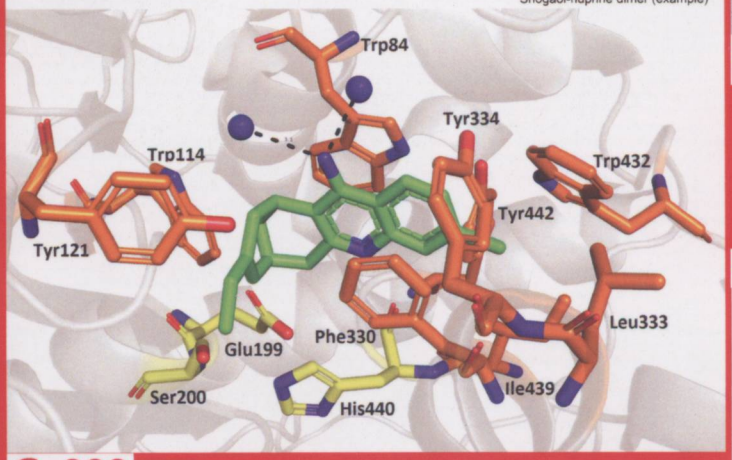

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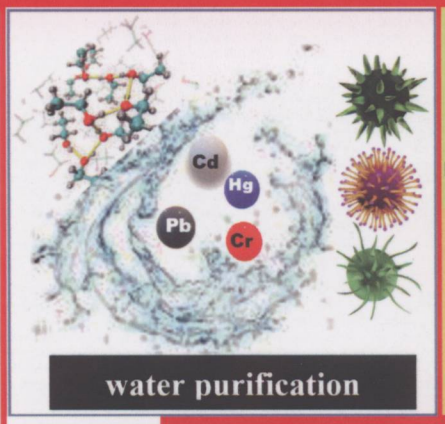

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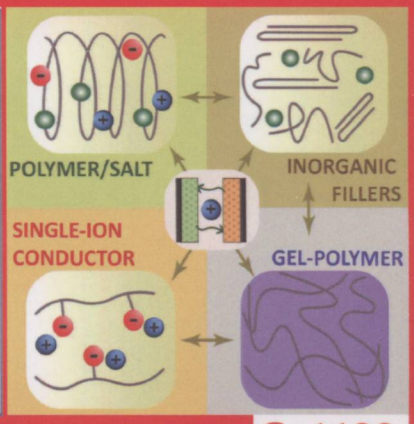

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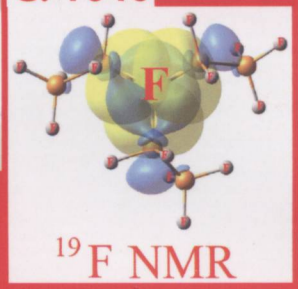

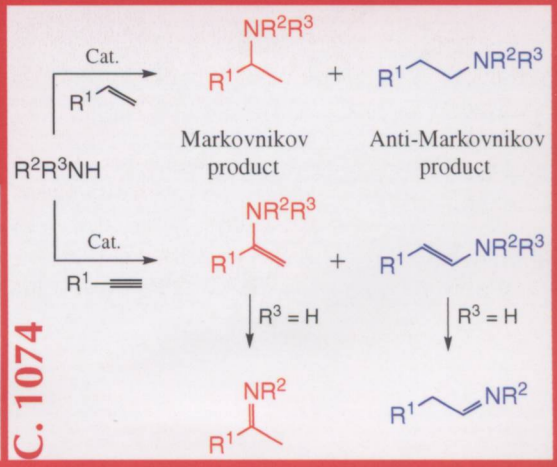

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Huprines — an insight into the synthesis and biological properties 999

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The overlapping of tacrine and (−)-huperzine A templates yielded a family of highly potent cholinesterase inhibitors, so-called huprines. A relatively easy access to these compounds led to the development of dozens of huprine derivatives allowing to draw structure–activity relationship mainly for acetylcholinesterase and butyrylcholinesterase enzymes, but also with application to other biological targets of interest. An extension of their pharmacological profile is commonly associated with huprine scaffold binding to some other pharmacophores that yield high-molecular-weight heterodimers. The main purpose in developing the huprine family is related to Alzheimer's disease therapy. However, these compounds are also interesting lead structures in the treatment of other disorders, such as Myasthenia gravis, African trypanosomiasis, malaria, and prion diseases. The present review provides a rationale behind the development of huprines, detailed synthetic routes leading to different classes of huprines, and a thorough discussion of their potential pharmacological applications.
Bibliography — 174 references.

Computational aspects of ^{19}F NMR 1040

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This review covers most recent advances in computation of ^{19}F NMR chemical shifts and spin–spin coupling constants involving ^{19}F nucleus calculated at different levels of theory. It deals mainly with electronic and stereochemical effects influencing these parameters, with a special emphasis on practical applications of such calculations. For ^{19}F NMR chemical shifts, a good deal of attention is focused on less common solid state studies, in addition to much more popular liquid state data. For spin–spin coupling constants, the main interest is concentrated on the most popular ^{19}F–^{1}H, ^{19}F–^{13}C and ^{19}F–^{19}F couplings providing marked stereochemical behaviour.
Bibliography — 149 references.

Catalysis and regioselectivity in hydrofunctionalization reactions of unsaturated carbon bonds. Part II. Hydroamination 1074

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This review continues consideration of the regioselectivity problem in the catalyzed hydrofunctionalization of unsaturated organic compounds and addresses hydroamination of unsaturated hydrocarbons. Particular Sections deal with reactions of alkenes, alkynes, allenes and dienes. It is shown that the selectivity of hydroamination depends on the natures of the reactants and the catalyst. Reaction conditions are described; in some cases, the reaction mechanisms are discussed. Reactions in which divergent regioselectivity is possible are noted.
Bibliography — 249 references.

Sorbents for water purification based on conjugated polymers 1115

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The sorption properties of polymers with a polyconjugated chain structure (polyaniline and polypyrrole) are considered. The molecular mechanism of sorption by these polymers of various classes of compounds such as heavy metal ions, toxic organic compounds and microscopic pathogens, which are most hazardous and difficult to remove water contaminants, is discussed. The use of such sorbents to purify water from microscopic pathogens, including bacteria and viruses, is addressed for the first time. Comparative analysis is given for the sorption capacity of polyconjugated polymers with respect to these types of contaminants, the efficiency of water treatment by these sorbents and characteristics of currently used sorbents. The applicability of polyaniline and polypyrrole and composites based on them as high performance versatile sorbents for water treatment is discussed, taking into account their properties: high stability, lack of solubility, non-toxicity, and ability to be regenerated and reused.
Bibliography — 194 references.

Polymer electrolytes for lithium- and sodium-ion batteries 1132

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The results of studies on polymer electrolytes for metal-ion batteries are analyzed and generalized. Progress in this field of research is driven by the need for solid-state batteries characterized by safety and stable operation. At present, a number of polymer electrolytes with a conductivity of at least 10^{-4} S cm^{-1} at 25 °C were synthesized. Main types of polymer electrolytes are described, *viz.*, polymer/salt electrolytes, composite polymer electrolytes containing inorganic particles and anion acceptors, as well as polymer electrolytes based on cation-exchange membranes. Ion transport mechanisms and various methods for increasing the ionic conductivity in these systems are discussed. Prospects of application of polymer electrolytes in lithium- and sodium-ion batteries are outlined.
Bibliography — 349 references.