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# Russian Chemical Reviews

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### **A possible version of homochirality origin on the Earth** 121

V.A.Pavlov, E.I.Klabunovskii

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The spin and orbital right-handed motion of the Earth are the simplest and permanent factors of chiral influence in nature. These factors are considered as being responsible for the choice of L-amino acids and D-sugars (homochirality) by Nature as building blocks for biomolecules existing as right-handed spirals. The sea wind and tide waves might be intermediate links for transmitting the chiral influence to the molecular level. Under the action of waves, right-handed spiral water associates are mainly formed in sea water, which promote the formation of the right-handed spirals of biomolecules. Biological evidence for the existence of these water associates is discussed.

Bibliography — 175 references.

### **Polyalkoxyflavonoids as inhibitors of cell division** 134

V.V.Semenov,<sup>a</sup> M.N.Semenova<sup>b</sup>

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Being structural analogues of natural microtubule-destabilizing cytostatics, polyalkoxyflavonoids represent a promising class of compounds for anticancer drug design. The synthetic routes to various polyalkoxyflavonoids and biological activity data assessed *in vitro* on human cancer cells and *in vivo* on sea urchin embryo model are surveyed. The relationship between the chemical structure and antiproliferative activities of polyalkoxyflavonoids are discussed.

Bibliography — 151 references.

### **Electrosynthesis of nanostructures and nanomaterials** 159

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The possibilities of electrosynthesis of nanostructures and nanomaterials are considered. The problems and prospects of development of research in this area are discussed. Methods of electrosynthesis are classified and their specific features and advantages as compared with other physical and chemical methods are demonstrated. Examples of nanomaterial electrosyntheses and applications in various devices are given.

Bibliography — 613 references.

### **Natural phenolic antioxidants in bioanalytical chemistry: state of the art and prospects of development** 194

G.K.Ziyatdinova, H.C.Budnikov

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Published data of the last decade on the chemical analysis and related problems of investigation of phenolic antioxidants as components of complex biomedical and food objects are generalized. The physicochemical properties of these compounds are presented in accordance with the up-to-date classification of their structures. Particular attention is paid to the development of new and advancement of traditional methods for determination of natural phenolic antioxidants in relation to public health protection problems. The interdisciplinary character of the considered problems is emphasized and the ways for problem solution are outlined.

Bibliography — 380 references.