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Substituted pyrroles based on ketones: prospects of application and advances in synthesis RCR5090

A.V.Ivanov, V.S.Shcherbakova, L.N.Sobenina

A.E.Favorsky Irkutsk Institute of Chemistry, Siberian Branch, Russian Academy of Sciences, Russia

This review considers the applications of pyrroles and compounds based on them in pharmaceuticals and various branches of technology in which pyrrole plays a key role. The emphasis is put on the studies that were not covered in the previous reviews. The second part of the review summarizes the published data of the last 15 years on the synthesis of pyrroles from widely used carbonyl compounds, which were chosen because of ready availability and the possibility of varying the substituents. This type of systematization is proposed for the first time.

Bibliography — 199 references.

Mechanochemical synthesis of organohalogen compounds: a synthetic chemist's view RCR5091

G.I.Borodkin

N.N.Vorozhtsov Novosibirsk Institute of Organic Chemistry, Siberian Branch of the Russian Academy of Sciences, Russia

Data on the mechanochemical synthesis of halogen-containing organic compounds published mainly over the past 10 years are summarized and critically analyzed. The established views about the methods of activation of mechanochemical halogenation reactions are discussed. The mechanochemical fluorination, chlorination, bromination and iodination reactions of organic compounds are considered. Particular attention is paid to reaction mechanisms, selectivity problem and consideration of the mechanochemical method as a promising trend of green chemistry. The review is devoted to applications of mechanochemistry in organic synthesis, while the fundamentals of mechanochemistry are beyond the scope of the review.

Bibliography — 155 references.

Applications of microwave technology in the field of solid oxide fuel cell — a review RCR5092

M.Fu, X.Lin, X.Li, Z.Tao

^a School of Resources, Environment and Safety Engineering, University of South China, Hengyang, Hunan Province 421001, China

^b Decommissioning Engineering Technology Research Center of Hunan Province Uranium Tailings Reservoir, University of South China, Hengyang, 421001, PR China

Microwave heating has gained considerable attention as a promising technology for the processing of ceramics, including materials used in solid oxide fuel cells (SOFCs). This unique heating method utilizes the dielectric loss of materials in an electromagnetic field, offering advantages such as rapid heating rates and low energy consumption. This review focuses on the recent applications and developments of microwave technology specifically for cathodes, anodes, and electrolyte materials in SOFCs. A deeper understanding of the potential benefits and challenges associated with microwave sintering can be gained by investigating the effects of microwave treatment on these SOFC materials. The ultimate goal of the review is to provide valuable insights into microstructure control and performance enhancement in SOFC materials through the use of microwave technology. By highlighting the advances and discussing the underlying mechanisms, researchers and practitioners in the field can explore the potential of microwave processing as a viable option for optimizing SOFC materials and improving overall cell performance.

Bibliography — 106 references.

Palladium complexes as promising antimicrobial agents

RCR5093

O.A.Zelevskaya, Ya.A.Gur'eva, A.V.Kutchin

Institute of Chemistry, Komi Scientific Centre, Ural Branch of the Russian Academy of Sciences, Syktyvkar, Russia

The review presents a summary and systematic analysis of the literature data on the antibacterial and antifungal activity of palladium complexes with organic ligands published over the past three years. The structures of different types of stable complexes are discussed. Taking into account the great structural diversity of the compounds under consideration, the classification is performed in terms of the nature of donor centers of the initial ligands. A group of palladium phthalocyanine complexes for photodynamic therapy is considered separately. The final section is devoted to palladium complexes with terpene ligands, which are of scientific interest to the authors of this review.

Bibliography — 97 references.