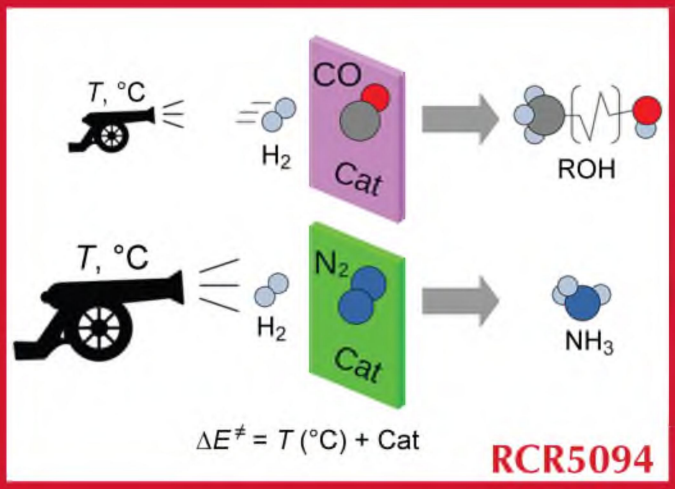
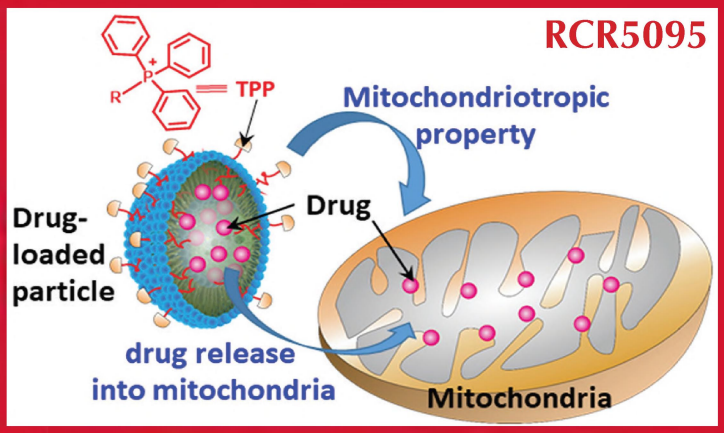
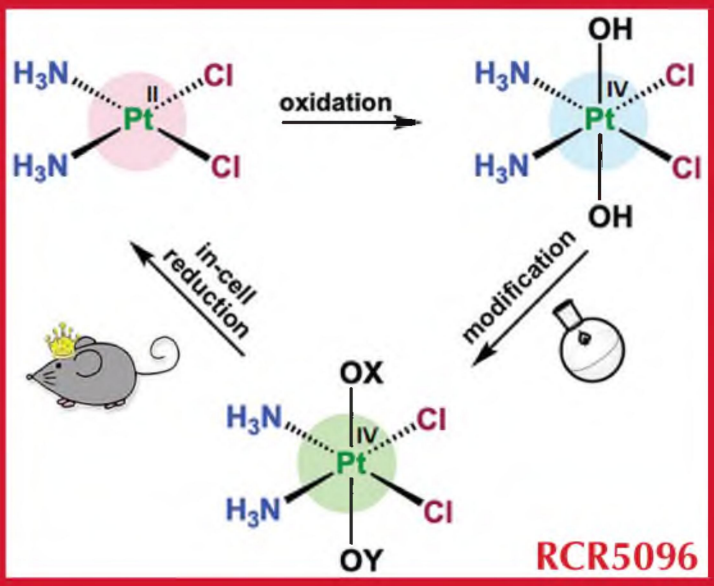
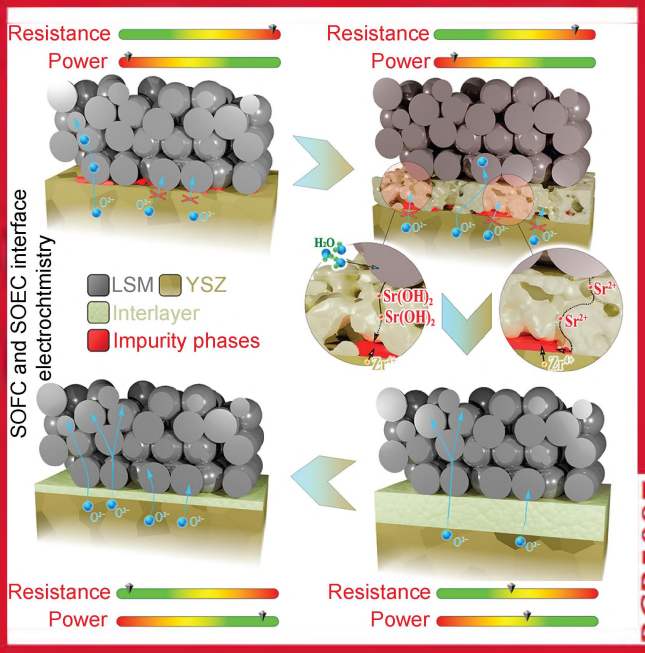
Russian Chemical Reviews

Успехи химии









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of the developed agents being markedly superior to clinically used cisplatin and carboplatin in therapeutic efficacy. This review summarizes the synthetic approaches to the design of Pt(IV) prodrugs and modification of the axial ligands. The second part of the review is devoted to the biological activity of Pt(IV) prodrugs reported in the period from 2018 to 2023 and comparison of various approaches to the design of effective anticancer agents based on these compounds.
Bibliography — 239 references.

Chemistry and electrochemistry of CeO_2-based interlayers: prolonging the lifetime of solid oxide fuel and electrolysis cells

RCR5097

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Research and development of solid oxide fuel cells (SOFCs) and solid oxide electrolysis cells (SOECs) are currently of paramount importance in terms of realizing hydrogen energy and carbon emission reduction programs, which many countries have committed to. Although, there are many outstanding results in the fabrication and characterization of SOFCs and SOECs with promising oxygen-ionic and proton-conducting electrolytes, conventional zirconia electrolytes are still widely used not only in a lab-scale setup, but also in the form of enlarged cells and stacks, with the experimental operation of the latter during 10000–100000 h. To ensure good performance stability and microstructural integrity of such multilayer cells, a special attention should be paid to the chemical activity of functional materials toward their interaction with each other, especially in long-term focus. The literature analysis has shown that many undesirable processes occur in SOFCs and SOECs with the classical pairs of zirconia electrolytes and strontium-containing electrodes, including element segregation and interdiffusion, insulating phase formation, microscopic defect appearance, and delamination. Some of these processes can be efficiently eliminated by using so-called interlayers designed from doped ceria materials. Due to their numerous beneficial functions, such interlayers have several synonymous names: blocking, barrier, buffer, or protecting layers. Herein, we review the recent progress and achievements in the fundamental and applied research on ceria interlayers and their impact on chemistry and electrochemistry of solid oxide cells based on classical zirconia electrolytes as well as promising oxygen-ionic and proton-conducting analogs.
Bibliography — 405 references.