

In this issue

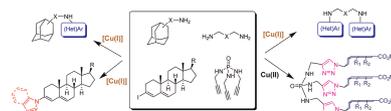
Alexei D. Averin, Anton S. Abel, Olga K. Grigorova, Gennadij V. Latyshev, Yury N. Kotovshchikov, Alexander Yu. Mitrofanov, Alla Bessmertnykh-Lemeune and Irina P. Beletskaya

Recent achievements in copper catalysis for C-N bond formation

<https://doi.org/10.1515/pac-2020-0301>
Pure Appl. Chem. 2020;
92(8): 1181–1199

Conference paper: The mini-reviews cover the application of the copper catalysis for the amines and polyamines arylation and heteroarylation, its utility in the transformations of steroids and macrocycles.

Keywords: Adamantane; Amination; “click” reactions; Cu catalysis; Immobilization; Mendeleev-21; Polyamines; Steroids.



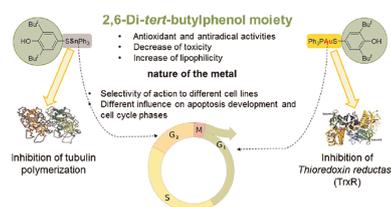
Elena R. Milaeva, Dmitry B. Shpakovsky, Yulia A. Gracheva, Taisiya A. Antonenko, Tatyana D. Ksenofontova, Evgeny A. Nikitin and Daria A. Berseneva

Novel selective anticancer agents based on Sn and Au complexes. Mini-review

<https://doi.org/10.1515/pac-2019-1209>
Pure Appl. Chem. 2020;
92(8): 1201–1216

Conference paper: Cytotoxic and antioxidant properties *in vitro* and *in vivo* of organotin and gold complexes based on 2,6-di-*tert*-butyl-4-mercaptophenol is discussed.

Keywords: 2,6-di-*tert*-butylphenol; antioxidants; apoptosis; Au(I) complexes; cell cycle; cytotoxicity; Mendeleev-21; metal-based drugs; organotin compounds; toxicity *in vivo*.



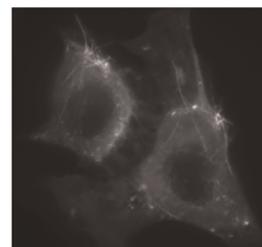
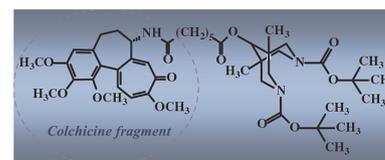
Olga N. Zefirova, Evgenia V. Nurieva, Birgit Wobith, Svetlana Schulz, Nikolay A. Zefirov and Sergei A. Kuznetsov

Novel colchicine conjugate with unusual effect on the microtubules of cancer cells

<https://doi.org/10.1515/pac-2019-1215>
Pure Appl. Chem. 2020; 92(8): 1217–1226

Conference paper: Colchicine derivative bearing substituted bispidine moiety induces not only depolymerization of microtubules of cancer cells, but stimulates the formation of small tubulin aggregates and long tubulin fibrils localized mainly around nuclei. The assemblies are morphologically different from tubulin clusters induced by structurally related anticancer agent tubuloclastin.

Keywords: 3,7-diazabicyclo[3.3.1]nonane; carcinoma A549; colchicine; Mendeleev-21; tubulin; tubuloclastin.



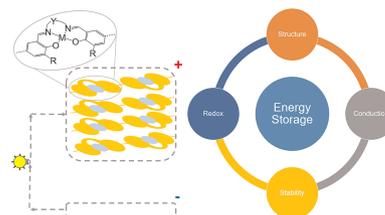
Irina A. Chepurayeva, Mikhail P. Karushev, Elena V. Alekseeva, Daniil A. Lukyanov and Oleg V. Levin

Redox-conducting polymers based on metal-salen complexes for energy storage applications

<https://doi.org/10.1515/pac-2019-1218>
Pure Appl. Chem. 2020; 92(8): 1239–1258

Conference paper: The article provides a general overview of the results of investigating key structure-property relationships of metal-salen polymers and using them to design polymer-modified electrodes with improved energy storage characteristics for advanced supercapacitors and lithium-ion batteries.

Keywords: charge diffusion coefficient; conductivity; electrochemical stability; lithium-ion battery; Mendeleev-21; metal-salen polymer; polymer-modified electrode; redox conducting metallopolymer; Schiff base; specific capacitance; supercapacitor.



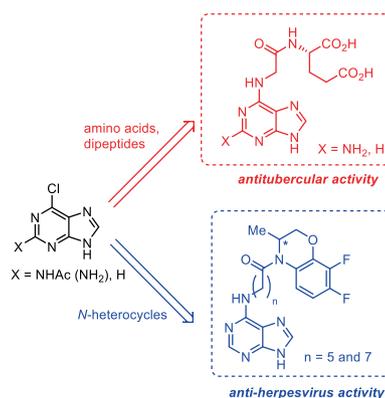
Victor P. Krasnov, Galina L. Levit, Vera V. Musiyak, Dmitry A. Gruzdev and Valery N. Charushin

Fragment-based approach to novel bioactive purine derivatives

<https://doi.org/10.1515/pac-2019-1214>
Pure Appl. Chem. 2020; 92(8): 1277–1295

Conference paper: In this review, recent results on the synthesis of novel conjugates of purine and 2-aminopurine with natural amino acids, short peptides, and *N*-heterocycles, including chiral ones, and the study of their biological activity are summarized. It has been demonstrated that the use of purine scaffold makes it possible to obtain compounds with high antitubercular and anti-herpesvirus activity.

Keywords: amines; amino acids; anti-tubercular activity; antiviral activity; bioactive molecules; coupling reactions; drug design; Mendeleev-21; nucleophilic substitution reactions; organic synthesis; stereochemistry.



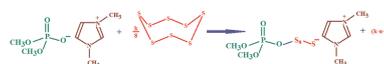
Natalia Tarasova, Efrem Krivoborodov, Anna Egorova, Alexey Zanin, Lev Glukhov, Ilya Toropygin and Yaroslav Mezhev

Reaction of 1,3-dimethylimidazolium dimethylphosphate with elemental sulfur

<https://doi.org/10.1515/pac-2019-1211>
Pure Appl. Chem. 2020; 92(8): 1297–1304

Conference paper: Interaction of 1,3-dimethylimidazolium dimethylphosphate with elemental sulfur.

Keywords: 1,3-dimethylimidazolium dimethylphosphate; Ionic liquids; Mendeleev-21; Quantum chemistry methods; Sulfur.

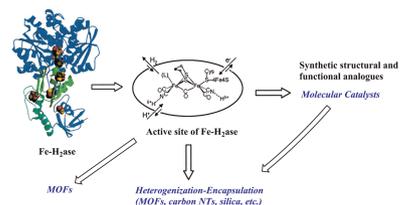


Y. H. Budnikova and V. V. Khrizanforova
Synthetic models of hydrogenases based on framework structures containing coordinating P, N-atoms as hydrogen energy electrocatalysts – from molecules to materials

<https://doi.org/10.1515/pac-2019-1207>
 Pure Appl. Chem. 2020; 92(8): 1305–1320

Conference paper: This mini-review generalizes some achievements in the field of development of new explore enzyme-inspired electrocatalysts for H₂ production/oxidation and their application for fuel cells.

Keywords: catalysis; electrocatalyst; fuel cell; hydrogen; hydrogenase; Mendeleev-21; metal complex.



Alexei D. Averin, Olga K. Grigorova, Anna S. Malysheva, Alexander V. Shaferov and Irina P. Beletskaya
Pd(0)-catalyzed amination in the synthesis of chiral derivatives of BINAM and their evaluation as fluorescent enantioselective detectors

<https://doi.org/10.1515/pac-2020-0205>
 Pure Appl. Chem. 2020; 92(8): 1367–1386

Conference paper: Pd(0)-catalyzed amination reactions were used to obtain versatile derivatives of (S)-1,1'-binaphthyl-2,2'-diamine (BINAM) featuring compounds with additional chiral and fluorophore groups, macrocyclic derivatives with various oxadiazine and polyamine linkers, as well as BINAM-containing cryptands. Many of BINAM derivatives were evaluated as fluorescent enantioselective detectors for a series of model amino alcohols and found to be able to recognize enantiomers by selective changes in the spectra of fluorescence.

Keywords: Amination; amines. 1,1'-binaphthyl-2,2'-diamine; chirality; detection; fluorescence; macrocycles; Mendeleev-21; Pd catalysis.

