Сведения об официальном оппоненте

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Список основных публикаций за последние 5 лет:

1. *Ivanov A.A., Pozmogova T.N., Solovieva A.O., Frolova T.S., Sinitsyna O.I., Lundovskaya O.V., Tsygankova A.R., Haouas M., Landy D., Benassi E., Shestopalova L.V., Falaise C., Cadot E., Shestopalov M.A., Abramov P.A., Sokolov M.N.* "From specific γ-CD / $[Nb_6Cl_{12}(H_2O)_6]^{2+}$ recognition to biological activity tuning" // Chem. Eur. J. 2020 V. 26, № 33. P. 7479-7485.
2. *Hummel T., Dutczak D., Alekseev A.Y., Adamenko L.S., Shestopalov M.A., Mironov Y.V., Enseling D., Jüstel T., Meyer H.-J.* "Photodynamic Properties of Tungsten Iodide Clusters, incorporated into silicone: $A_2[M_6I_8L_6]$@silicone" // RSC Adv. 2020. V. 10, № 37. P. 22257-22263.
3. *Konovalov D.I., Ivanov A.A., Frolova T.S., Eltsov I.V., Gayfulin Y.M., Plunkett L., Bazzar M., Adawi A.M., Bouillard J.-S.G., Baiborodin S.I., Sinitsyna O.I., Kuratieva N.V., Yanshole V.V., Efremova O.A., Shestopalov M.A.* "Water-soluble rhenium clusters with triazoles: the effect of chemical structure on cellular internalization and the DNA binding of the complexes" // Chem. Eur. J. 2020. V. 26, № 61. P.13904-13914.
4. *Falaise C., Ivanov A.A., Molard Y., Amela Cortes M., Shestopalov M.A., Haouas M., Cadot E., Cordier S.* "From supramolecular to solid state chemistry: crystal engineering of luminescent materials by trapping molecular clusters in an aluminium-based hosting matrix" // Mater. Horiz. 2020. V. 7, № 9. P. 2399-2406.
5. Vorotnikov Y.A., Novikova E.D., Solovieva A.O., Shanshin D.V., Tsygankova A.R., Shcherbakov D.N., Efremova O.A., Shestopalov M.A. "Single-

domain antibody C7b for address delivery of nanoparticles to HER2-positive cancers" // Nanoscale 2020. V. 12, № 42. P. 21885-21894.

6. *Novikova E.D., Vorotnikov Y.A., Nikolaev N.A., Tsygankova A.R., Efremova O.A., Shestopalov M.A.,* "Synergetic effect of Mo_6 clusters and gold nanoparticles on photophysical properties of both components" // Chem. Eur. J., 2021, V. 27. No. 8, P. 2818-2825.

7. *Kirakci K., Pozmogova T.N., Protasevich A.Y., Vavilov G.D., Stass D.V., Shestopalov M.A., Lang K.,* "Water-Soluble Octahedral Molybdenum Cluster Complex as a Potential Agent for X-Ray Induced Photodynamic Therapy" // Biomater. Sci. 2021. V. 9. No. 8. P. 2747-3174.

8. *Vorotnikova N.A., Bardin V.A., Vorotnikov Y.A., Kirakci K., Adamenko L.S., Alekseev A.Y., Meyer H.-J., Kubát P., Mironov Y.V., Lang K., Shestopalov M.A.,* "Heterogeneous photoactive antimicrobial coating based on a fluoroplastic doped with an octahedral molybdenum cluster compound" // Dalton Trans., 2021,V. 50. No. 24. P. 8467-8475.

9. *Novikova E.D., Vorotnikov Y.A., Nikolaev N.A., Tsygankova A.R., Shestopalov M.A., Efremova O.A.,* "The Role of Gold Nanoparticles' Aspect Ratio in Plasmon-Enhanced Luminescence and Singlet Oxygen Generation Rate by Mo_6 Clusters" // Chem. Commun., 2021, V. 57. No. 63. P. 7770-7773.

10. *Pozmogova T.N., Sitnikova N.A., Pronina E.V., Miroshnichenko S.M., Kushnarenko A.O., Solovieva A.O., Bogachev S.S., Vavilov G.D., Efremova O.A., Vorotnikov Y.A., Shestopalov M.A.,* "Hybrid system $\{W_6I_8\}$-cluster/dsDNA as an agent for targeted X-ray induced photodynamic therapy of cancer stem cells" // Mater. Chem. Front. 2021, V. 5. No. 20. P. 7499-7507.

11. *Pronina E.V., Pozmogova T.N., Vorotnikov Y.A., Ivanov A.A., Shestopalov M.A. "The role of hydrolysis in biological effects of molybdenum cluster with DMSO ligands"* // J. Biol. Inorg. Chem. 2022. V. 27, № 1. P. 111-119.

12. Ivanov A.A., Haouas M., Evtushok D.V., Pozmogova T.N., Golubeva T.S., Molard Y., Cordier S., Falaise C., Cadot E., Shestopalov M.A. "Stabilization of octahedral metal halide clusters by host-guest complexation with γ-cyclodextrin:

toward non-toxic luminescent compounds" // Inorg. Chem. 2022. V. 61, № 36. P. 14462-14469.

13. *Bardin V.A., Vorotnikov Y.A., Stass D.V., Vorotnikova N.A., Shestopalov M.A.* "Oxygen-sensitive photo- and radioluminescent polyurethane nanoparticles modified with octahedral iodide tungsten cluster" // Nanomaterials. 2022. V. 12, № 20. P. 3580.

14. *Marchuk M.V., Asanov I.P., Panafidin M.A., Vorotnikov Y.A., Shestopalov M.A.* "Nano TiO2 and Molybdenum/Tungsten Iodide Octahedral Clusters: Synergism in UV/Visible-Light Driven Degradation of Organic Pollutants" // Nanomaterials. 2022. V. 12, № 23. P. 4282.

15. *Конькова А.В., Коновалов Д.И., Позмогова Т.Н., Иванов А.А., Воротников Ю.А., Шестопалов М.А.* «Пролонгированное цитостатическое действие наноразмерного NH_2-UiO-66, допированного доксорубицином» // Изв. Акад. наук, серия хим. 2023. Т. 72, № 2. С. 574-581.

16. *Bardin V.A., Vorotnikov Y.A., Asanov I.P., Vorotnikova N.A., Shestopalov M.A.* "Visible-light active S-scheme heterojunction photocatalyst based on nanosized anatase TiO_2 and octahedral iodide molybdenum clusters" // Appl. Surf. Sci. 2023.V. 612. P. 155738.

17. *Kirakci K., Shestopalov M.A., Lang K.* "Recent developments on luminescent octahedral transition metal cluster complexes towards biological applications" // Coord. Chem. Rev. 2023. V. 481. P. 215048.

18. *Novikova E.D., Pronina E.V., Vorotnikov Y.A., Adamenko L.S., Alekseev A.Y., Shestopalov A.M., Tsygankova A.R., Gusel'nikova T.Y., Kubat P., Kirakci K., Lang K., Shestopalov M.A.* "Cotton fabrics modified with molybdenum nanoclusters for photodynamic inactivation of bacteria and viruses" // J. Env. Chem. Eng. 2023. V. 11. P. 110796

19. *Pronina E.V., Vorotnikov Y.A., Pozmogova T.N., Tsygankova A.R., Kirakci K., Lang K., Shestopalov M.A.* "Multifunctional Oxidized Dextran as a Matrix for Stabilization of Octahedral Molybdenum and Tungsten Iodide Clusters in Aqueous Media" // Int. J. Mol. Sci. 2023. V. 24, № 12. P. 10010.

20. *Vorotnikov Y.A., Vorotnikova N.A., Shestopalov M.A.* “Silica-Based Materials Containing Inorganic Red/NIR Emitters and Their Application in Biomedicine” // Materials. 2023. V. 16, № 17. P. 5869.

21. *Pronin A.S., Pozmogova T.N., Vorotnikov Y.A., Vavilov G.D., Ivanov A.A., Yanshole V.V., Tsygankova A.R., Gusel’nikova T.Y., Mironov Y.V., Shestopalov M.A.* “PEGylation of Terminal Ligands as a Route to Decrease the Toxicity of Radiocontrast Re_6-Clusters” // Int. J. Mol. Sci. 2023. V. 24, № 23. P. 16569.

22. *Konkova A.V., Savina I.V., Evtushok D.V., Pozmogova T.N., Solomatina M.V., Nokhova A.R., Alekseev A.Y., Kuratieva N.V., Eltsov I.V., Yanshole V.V., Shestopalov A.M., Ivanov A.A., Shestopalov M.A.* “Water-Soluble Polyoxometal Clusters of Molybdenum (V) with Pyrazole and Triazole: Synthesis and Study of Cytotoxicity and Antiviral Activity” // Molecules 2023. V. 24, № 28. P. 8079

23. *Ivanova M.N., Bardin V.A., Vorotnikov Y.A., Kuratieva N.V., Shestopalov M.A.* “Photocatalytic Properties of a Functional Material Based on Modified Boron Nitride and a Molybdenum Cluster Complex” // Kin. Cat. 2024. V. 65. P. 556-564.

24. *Olawoyin C.O., Vorotnikov Y.A., Asanov I.P., Shestopalov M.A., Vorotnikova N.A.* “N-doped titania nanoparticles containing Mo6 bromide and iodide clusters: activity in photodegradation of rhodamine B and tetracycline” // Chemosphere. 2024. V. 366. P. 143531

25. *Vorotnikova N.A., Vorotnikov Y.A., Shestopalov M.A.* “Functional materials containing luminescent octahedral halide clusters of molybdenum and tungsten: Diversity of synthetic approaches and binding modes” // Coord. Chem. Rev. 2024. V. 500. P. 215543.