

Curricula Vitae (CV)

Arshak A. Tsaturyan

Education and Degrees:

2006-2011 - Specialist degree in Physical Chemistry
Southern Federal University

2011-2014- Postgraduate student in Physical
Chemistry Southern Federal University

The PhD thesis «Physicochemical properties and
structure of new ligands based on some hydrazones
and their complexes with metals»

2009-2013 – bachelor degree of Economy Southern
Federal University

2013-2015- master degree of Economy Southern
Federal University

The Master degree thesis «Analysis of the current state, problems and prospects of
the world market of alternative energy resources»

2013 – listened a course of training Solar Energy Delft University of Technology
on edx.org

Research activity

Synthesis and quantum chemical modeling of coordination compounds for Dye sensitized solar cells and magnetoactive materials. Synthesis and investigation of quantum dots (ZnS, PbS, CdS). Economical instruments of increase share of alternative energy

Employment

2014-Present Junior Researcher, Department of structure and reactivity of organic compounds, Institute of Physical and Organic Chemistry, Southern Federal University

2012-2015 Present Head of Student interdisciplinary innovation laboratory
"Alternative Energy"



2013-2014 Engineer, Chair of physical and colloid chemistry, Chemistry department, Southern Federal University

2011-2014 The team leader of Sfedu team of Enactus. (Enactus is a community of student, academic and business leaders committed to using the power of entrepreneurial action to transform lives and shape a better more sustainable world)

Fields of scientific research

Alternative energy, quantum and computation chemistry, developing of the novel sensitizers for dye sensitized solar cells, theoretical and experimental investigation of coordination compounds, the economic instruments of alternative energy.

Methods

Ab initio and Density Functional Theory for geometric, electron structure analysis of molecules (Gaussian 03, Orca, Chemcraft, Chemissian), IR, UV-Vis, NMR spectroscopy, some experimental methods for synthesis of transition metal complexes

Publications:

1. L.D. Popov, S.A. Borodkin, **A.A. Tsaturyan**, Y.P. Tupolova, S.I. Levchenkov, V.V. Minin, A.S. Burlov, Y.V. Revinskii, I.N. Shcherbakov, E.A. Raspopova Novel ligand system based on the sulfanylamide and quinazolinone fragments: synthesis, structure and properties (2017) Russian Journal of General Chemistry, 87 (1), pp. 70-80.
2. **Tsaturyan, A.A.**, Shcherbakov, I.N., Shvydko, T.V., Kogan, V.A., The quantum-chemical study of the structure and spectrum properties of coordination compounds Fe(II) and Ru(II) with the quaterpyridine derivatives as a sensitizer for DSSC (2017) Russian Chemical Bulletin, 66(1), pp
3. Kaydashev, V.E., Lyanguzov, N., Zhilin, D., **Tsaturyan, A.**, Raspopova, E.A., Kaidashev, E.M. Plasmon coupled nanoparticle arrays for fluorescence, photoluminescence and Raman scattering enhancement. (2016) Journal of Physics: Conference Series, 741 (1), art. no. 012145
4. **Tsaturyan, A.A.**, Shcherbakov, I.N., Kogan, V.A., Shvydko, T.V. Influence of the number of anchor groups on the photophysical properties of coordination compounds as components of dye-sensitized solar cells (2015) Russian Chemical Bulletin, 64 (8), pp. 1801-1807.
5. **Tsaturyan, A.A.**, Popov, L.D., Tupolova, Y.P., Shcherbakov, I.N., Askalepova, O.I., Lukov, V.V., Levchenkov, S.I., Zubenko, A.A., Kogan, V.A. Physico-chemical and theoretical investigation of the Schiff's base of 2,6-diformyl-4-tert-butylphenol and m-aminocinnamic acid (2015) Russian Journal of General Chemistry, 85 (11), pp. 2560-2567.

6. Popov, L.D., Tupolova, Yu.P., Levchenkov, S.I., **Tsaturyan, A.A.**, Lukov, V.V., Borodkin, S.A., Shcherbakov, I.N., Burlov, A.S., Zubenko, A.A., Pankov, I.V. Physico-chemical study of the complex formation between 2-(tosylamino)benzaldehyde bishydrazones and transition metal ions (2015) Russian Journal of General Chemistry, 85 (8), pp. 1902-1909.
7. Levchenkov, S.I., Shcherbakov, I.N., Popov, L.D., Vlasenko, V.G., Suponitskii, K.Yu., **Tsaturyan, A.A.**, Lukov, V.V., Kogan, V.A./Influence of the bridging coordination of DMSO on the exchange interaction character in the binuclear copper(II) complex with the nonsymmetrical exchange fragment (2014) Russian Journal of Coordination Chemistry/Koordinatsionnaya Khimiya, 40 (8), pp. 523-530.
8. Levchenkov, S.I., Shcherbakov, I.N., Popov, L.D., Suponitskii, K.Yu., **Tsaturyan, A.A.**, Beloborodov, S.S., Kogan, V.A. /Tetranuclear copper(II) complex with the heterocyclic azomethine ligand: Crystal structure and magnetic properties (2014) Russian Journal of Coordination Chemistry 40 (2), pp. 69-76.
9. Popov, L.D., Levchenkov, S.I., Shcherbakov, I.N., **Tsaturyan, A.A.**, Askalepova, O.I., Maevskii, O.V., Zubenko, A.A., Kogan, V.A. / Synthesis, physicochemical study, and quantum-chemical simulation of hydrazones based on 2-hydrazinoimidazoline (2014) Russian Journal of General Chemistry, 84 (4), pp. 676-681.
10. Levchenkov, S.I., Popov, L.D., Shcherbakov, I.N., Vlasenko, V.G., **Tsaturyan, A.A.**, Beloborodov, S.S., Ionov, A.M., Kogan, V.A./Binuclear complexes of copper(II) with 1'-phthalazinyldiazones of substituted salicylic aldehydes: Physico-chemical study and quantum-chemical simulation (2014) Russian Journal of General Chemistry, 84 (10), pp. 1970-1978.
11. Popov, L.D., Levchenkov, S.I., Shcherbakov, I.N., Aleksandrov, G.G., **Tsaturyan, A.A.**, Beloborodov, S.S., Maevskii, O.V., Kogan, V.A. / Structure and magnetic properties of binuclear copper(II) complexes with 2,6-diformyl-4-tert-butylphenol bis(imidazolinyldiazone) (2013) Russian Journal of General Chemistry, 83 (12), pp. 2314-2319.
12. Levchenkov, S.I., Shcherbakov, I.N., Popov, L.D., Lyubchenko, S.N., Suponitskii, K.Y., **Tsaturyan, A.A.**, Beloborodov, S.S., Kogan, V.A. / Transition metal complexes with 2,6-Di-tert-butyl-p-quinone 1'-phthalazinyldiazone (2013) Russian Journal of General Chemistry, 83 (10), pp. 1928-1936.
13. Levchenkov, S.I., Shcherbakov, I.N., Popov, L.D., Lukov, V.V., Minin, V.V., Starikova, Z.A., Ivannikova, E.V., **Tsaturyan, A.A.**, Kogan, V.A. / The magnetic exchange interaction via N-H...O-bonding in copper(II) complex with 1-phenyl-3-methyl-4-formylpyrazol-5-one 2-quinolyldiazone(2013) Inorganica Chimica Acta, 405, pp. 169-175.
14. Levchenkov, S.I., Popov, L.D., Shcherbakov, I.N., Aleksandrov, G.G., **Tsaturyan, A.A.**, Beloborodov, S.S., Maevskii, O.V., Kogan, V.A. / Crystal structure and magnetic properties of the binuclear copper(II) complex with 2,6-diformyl-4-tert-butylphenol bis(imidazolinyldiazone) (2013) Russian Journal of Coordination Chemistry/Koordinatsionnaya Khimiya, 39 (7), pp. 493-499.

15. Popov, L.D., Levchenkov, S.I., Shcherbakov, I.N., **Tsaturyan, A.A.**, Tupolova, Y.P., Starikova, Z.A., Burlov, A.S., Lukov, V.V., Kogan, V.A. / 2-(N-tosylamino)benzaldehyde thiobenzoylhydrazone and its complexes with copper(II) and zinc(II): Synthesis and structures (2013) Russian Journal of Coordination Chemistry/Koordinatsionnaya Khimiya, 39 (5), pp. 367-372.
16. Popov, L.D., Levchenkov, S.I., Shcherbakov, I.N., Kiskin, M.A., Borisova, N.E., **Tsaturyan, A.A.**, Kogan, V.A. / Crystal structure of bis-Isonicotinoyl hydrazone of 2,5-diformylpyrrole (2013) Journal of Structural Chemistry, 54 (3), pp. 592-597.

Scientific project

as a project manager

2017-2019 The search of new highly efficient photosensitizers, coordination compounds of d-elements with derivatives of quaterpyridine ligand. Russian President Grant

2014-2015 Winner of the Youth Research and Innovation Competition. Foundation for Assistance to Small Innovative Enterprises in the scientific and technical sphere Project № 00349

2014-2015 The theoretical prediction of the photophysical properties of active complexes in the dye-sensitized solar cells. The Russian Foundation for Basic Research Project № 14-03-31570 mol_a

as a researcher

2014-2016 Bi- and polynuclear metal complexes of compartmental ligands as prospective molecular magnets and enzyme active sites models The Russian Foundation for Basic Research Project № 14-03-00788_a

2013-2015 Hi-spin mono- and polynuclear metal complexes based on polydentate N-donors as potential components for molecular electronics and as synthetic models of non-heme metalloproteins The Russian Foundation for Basic Research Project № 13-03-00383_A

2012-2013 Biologically active complexes of transitional metals with imidazolinylhydrazones of mono- and dicarbonyl compounds: synthesis, physical-chemical research and quantum-chemical modeling The Russian Foundation for Basic Research Project № 12-03-31691 mol_a

Conference participation

42nd International Conference on Coordination Chemistry, Coordination compounds of the earth abundant metals as novel sensitizer for DSSC July 3-8, 2016, Brest, France

21st International symposium on the photochemistry and photophysics of coordination compounds 5th - 9th July 2015, Krakow, Poland

XXV th International Chugaev Conference on Coordination Chemistry, Suzdal, 6-11th of June 2011, Russia

VIII th International Conference «Spectroscopy of coordination compounds» Tuapse 23th of September 2011

IX Russian Conference with international participation «Spectroscopy of coordination compounds» 13-19th of September 2012

X th International Conference «Spectroscopy of coordination compounds» Tuapse 22-28th of September 2013

VII th Russian conference of chemistry polynuclear compounds and clusters «Cluster-2012» Novosibirsk 17-22th of June 2012

VI International conference "High-Spin Molecules and Molecular Magnets". Rostov-on-Don, Russia, 8-13th of September, 2012.

VIII th Annual conference of student and postgraduate student of base chairs SSC of Russian Academy of Sciences Rostov-on-Don 11-26th of April 2012

XVIIth International Conference "Physical Methods in Coordination Chemistry". October 24-26, 2012, Chişinău, Moldova

University records

2011- winner of special scholarship of Rector SFEDU

2012-2013 winner of personal grant for high results in science and education from Philip Morris Sales and Marketing Ltd