

**Assistant Professor Denitsa Elenkova**

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**Education**

2015 – Ph.D. in Chemical science 4.2. Chemical science (Inorganic Chemistry)

2010 – Master in Environmental Chemistry, Sofia University "St. Kliment Ohridski, Faculty of Chemistry and Pharmacy

2008 – Bachelor in Chemistry, Profile: Analytical Chemistry, Sofia University "St. Kliment Ohridski, Faculty of Chemistry and Pharmacy

**Professional Development**

2015 –Assistant Professor, Department Inorganic Chemistry, Sofia University "St. Kliment Ohridski, Faculty of Chemistry and Pharmacy

2013 – Teaching Assistant, Department Inorganic Chemistry, Sofia University "St. Kliment Ohridski, Faculty of Chemistry and Pharmacy

**Internships**

- In Saarland University, Saarbrücken, Germany

2 month internship June 2011-August 2011 in the group of Coordination Chemistry, Research director: Associate Professor Kaspar Hegetschweiler, Ph.D. Advisor: Bernd Morgenshtern, Ph.D

- In Molecular Biophysics, CNRS – Orleans, France

2 month internship June 2012-August 2012 in the group Luminescent lanthanide compounds, optical spectroscopy and bioimaging, Research director: Associate Professor Stephane Petoud, Ph.D, Advisor: Svetlana Eliseeva, Ph.D

### Scientific interests

#### Member of the Laboratory of Rare Earth Chemistry

Synthesis and investigation of optical properties of coordination compounds with lanthanoid elements.

#### Selected publications (up to 5)

- Boris Borrisov, Martin Tsvetkov, Tsvetan Zahariev, Denitsa Elenkova, Bernd Morgenstern, Deyan Dimov, Rositsa Kukeva, Natasha Trendafilova, Ivelina Georgieva, **Effect of Pyrrolidinedithiocarbamate Ligand on the Luminescence Properties of Heteroligand Samarium and Europium Complexes: Experimental and Theoretical Study**, *Inorganic Chemistry*, 2024, <https://doi.org/10.1021/acs.inorgchem.4c00134>
- Martin Tsvetkov, Denitsa Elenkova, Mihail Kolarski, Rumen Lyapchev, Bernd Morgenstern, Vladimira Videva, Joana Zaharieva, Maria Milanova, **Synthesis, crystal structure and luminescence properties of two novel Tb(III) complexes with 1,10-phenanthroline derivatives as ligands**, *Journal of Molecular Structure*, 2024, doi:10.1016/j.molstruc.2024.138768
- D Elenkova, D Gagashev, E Encheva, M Tsvetkov, **Effect of different lanthanide ions on the catalytic activation of peroxymonosulfate with lanthanide metal-organic frameworks (Ln-MOFs) with terephthalic acid**, *IOP Conference Series: Earth and Environmental Science*, 2024, doi:10.1088/1755-1315/1305/1/012013
- J. Romanova, R. Lyapchev, M. Kolarski, M. Tsvetkov, **D. Elenkova**, B. Morgenstern, J. Zaharieva, **Molecular Design of Luminescent Complexes of Eu(III): What Can We Learn from the Ligands**, *Molecules*, vol:28, issue:10, 2023, pages:4113-0, doi:10.3390/molecules28104113,
- **Denitsa Elenkova**, Rumen Lyapchev, Julia Romanova, Bernd Morgenstern, Yana Dimitrova, Deyan Dimov, Martin Tsvetkov, Joana Zaharieva, **Luminescent Complexes of Europium (III) with 2-(Phenylethynyl)-1,10-phenanthroline: The Role of the Counterions**, *Molecules*, vol:26, issue:23, 2021, pages:7272-0, doi:<https://doi.org/10.3390/molecules26237272>

#### Project activity – (research projects in the last 5 years)

- “New nanocomposite materials based on mixed metal oxides of d- and f-elements as purification catalysts in Fenton-like reactions” Project 70-123-486, NextGenerationEU, Member of the research team; 2023-2025

- “High Selective Luminescent Sensors Based on Stable Lanthanide Metal-Organic Frameworks (Ln-MOFs) for Detection of Water Pollutants”, Project KP-06-N69/6, National Fund of Science, Coordinator of the research; team: 2022-2025
- “Synthesis and investigation of sensing properties of lanthanoid metal-organic frameworks (Ln-MOFs)” Project 80-10-7 , MES, National Fund of Science, Coordinator of the research; team: 2022
- “Molecular design of photoactive metal-containing systems with promising applications” Project KP-06-N59/6, National Fund of Science, Member of the research team; 2021-2024
- “Antenna effects in coordination of lanthanide ions to photoactive molecules quinoline and imidazoquinoline derivatives as bi- and tridentate” Project KP-06-N39/6, National Fund of Science, Member of the research team; 2021-2024
- “Fluorescent complexes of lanthanoid ions with phenanthroline derivatives as ligands - synthesis and characterization” Project 80-10-50, MES, National Fund of Science, Coordinator of the research; team: 2021
- “Trapping of N-Heterocyclic Carbenes with Boron Derivatives” Project 80-10-149, MES, National Fund of Science, Member of the research team , 2021
- “Physicochemical characteristics of new crystal structures of molybdates of the type  $\text{Ln}_2(\text{MoO}_4)_3$  (Ln = La, Gd, Lu), determined by the modification with Sm, Tb and Dy” Project KP-06-M39/3, National Fund of Science, Coordinator of the research; team: 2020-2022
- “Synthesis and characterization of new materials for white LEDs based on  $\text{Gd}_2(\text{MoO}_4)_3$  modified with lanthanide ions” Project 80-10-153 , MES, National Fund of Science, Member of the research team , 2019
- “Clean technologies for a sustainable environment - water, waste, energy for a circular economy”, Project: BG05M2OP001-1.002-0019, financed by the Operational Program "Science and Education for Smart Growth, Member of the research team; 2018-2023

### Teaching activity

#### *Practical classes:*

Seminars and exercises in "**General and inorganic chemistry**" and "**Chemistry of elements**" - all specialties of Faculty of Chemistry and Pharmacy, Faculty of Biology

#### *Lectures and practical classes:*

"**Properties and modern applications of rare earth elements**" - optional undergraduate course

"**Materials based on rare earth elements**" - optional master's course for the master's program Inorganic and hybrid materials for modern technologies.

