Molecular sensors for calcium ion detection via triplet-triplet annihilation upconversion

Andreeva, V.D.

Curriculum Vitae

Valeriia Dmitriievna Andreeva was born in Usolye-Sibirskoye in Irkutsk region, Russian Federation on 13th of June 1995. In 2013 she graduated from School № 1504 in Moscow. In 2017 she received her Bachelor of Science degree in Chemical Technology at the M.V. Lomonosov Moscow Institute of Fine Chemical Technology (MITHT). Her bachelor thesis named "Synthesis of the polycationic amphiphile based on thiocholesterol" formed a part of the publication of Puchkov P.A., *et al*. *Molbank* **2018**, *2018* (1), M981. In 2019 Valeriia received her Master of Science degree *with honors* in Chemical Technology of biologically active compounds at MIREA-Russian Technological University (previously MITHT). During the MSc program she performed an internship at The Institute of Physical Chemistry and Electrochemistry RAS, Moscow (Russian Federation), where she wrote her master thesis entitled "Synthesis of derivatives of *β* – substituted porphyrins containing donor and acceptor substituents". The results of this work are reported in the publication Andreeva V.D., *et al*. *Macroheterocycles* **2021**, *14* (4), 263–269.

In August 2019 she started her PhD studies at Leiden University under the supervision of Prof. Sylvestre Bonnet and Prof. Elisabeth Bouwman at the "Metals in Catalysis, Biomimetics and Inorganic Materials" (MCBIM) research group. Within Leiden University she collaborated with Dr. Roxanne Kieltyka and Dr. ir. Lennard Voortman (LUMC). As a Marie Skłodowska-Curie early-stage researcher within the LogicLab consortium she collaborated with Prof. Tia Keyes (Dublin City University, Dublin, Ireland), Dr. Lenie van den Broek (MIMETAS, Leiden, the Netherlands), Prof. Benjamin Dietzek-Ivanšić (Leinbniz Institute of Photonic Technology, IPHT, Jena, Germany) and Dr. hab. Martin Presselt (SciClus GmbH&Co. KG, Jena, Germany). Besides her work in Leiden, she also made secondments in IPHT (Jena, Germany). In addition to her PhD research activities, she assumed the role of lab-chief in the MCBIM research group and managed regular meetings within the LogicLab consortium. She supervised two BSc and one MSc students in Leiden, and assisted in BSc practical courses. She was awarded a poster prize at the 3rd Frontiers in Photochemistry Conference in Cancun, Mexico. She also was a co-organizer of the symposium "Molecular Biosensing: From Theory to Practice" and participated in the "Nacht van Ontdekkingen" science communication event in Leiden.

Valeriia presented her PhD work at multiple conferences and symposia:

2023 IUPAC/CHAINS, *Den Haag* – **Talk**;
2023 16th International Symposium on Applied Bioinorganic Chemistry (ISABC), *Ioannina* – **Talk**;
2022 3rd Frontiers in Photochemistry, *Cancun* – **Best Poster Prize**;
2022 CHAINS, *Amsterdam* – **Poster**;
2022 HRSMC symposium, *Amsterdam* – **Poster**;
2022 IUPAC, *Amsterdam* – **Poster**;

2021 Molecular Biosensing: From theory to Practice, *online* – **Poster**;
2021 CHAINS, *online* – **Poster**.

She also followed several courses and workshops:

2024 Scientific Conduct for PhDs, Leiden University;
2023 Writing an Excellent Grant Proposal, Leiden University;
2023 High Impact Writing, HRSMC;
2022 Photochemistry Summer School, HRSMC;
2021 Integrated Cell Biology, Leiden University;
2021 Photophysics, Photochemisty and Photobiology, HRSMC;
2021 Communication in Science, Leiden University;
2019 Photochemistry MSc course, Leiden University (free listener).

List of Publications

- **Andreeva V.D.**; Bergsma K; Bonnet S. A. Structure-properties relationship in upconversion-based calcium sensors. – *In preparation*
- **Andreeva V.D.**; Roosen I; Götzfried S.K.; Prabhakaran A.; Ehlers H.; Janssen M., Sariol A.I.; Voortman L.M.; Kieltyka R.E.; van den Broek L.; Keyes T.; Bonnet S. A. Upconverting liposomes for calcium sensing in cytosolic conditions. – *In preparation*
- Regeni I, Hakkennes M.L.A., V. **Andreeva V.D.**, Bonnet S.A. Excited state modulations of polypyridyl Ru(II) complexes by ditopic ligand. – *In preparation*.
- **Andreeva V.D.**; Regeni I.; Yang T.; Elmanova A.; Presselt M.; Dietzek-Ivanšić B.; Bonnet S.A. Triplet-triplet annihilation upconversion for calcium sensing. – *The journal of physical chemistry letters* **2024**, 15, 7430-7435. https://doi.org/10.1021/acs.jpclett.4c01528.
- **Andreeva V.D.***; Ehlers H.*; Krishna A. K.*; Presselt M.; van den Broek L.; Bonnet S. Combining nitric oxide and calcium sensing for the detection of endothelial dysfunction. – Review. *Communications Chemistry* **2023**, 6, 179. https://doi.org/10.1038/s42004-023-00973-8.
- **Andreeva V.D.**; Ponomarev G.V.; Shkirdova A.O.; Tyurin V.S.; Zamilatskov I.A. Modification of β-Octaethylporphyrin via Insertion of Amino and Azino Groups into Meso-Positions. *Macroheterocycles* **2021**, *14* (4), 263–269. https://doi.org/10.6060/mhc213990z.
- Puchkov P.A.; Shmendel E.V.; **Andreeva V.D**.; Morozova N.G.; Zenkova M.A.; Maslov M.A. A Novel Disulfide-Containing Polycationic Amphiphile: 1,28-Di[(Cholest-5-En-3β-Yl)Disulfanyl]-4,25-Dioxo-3,8,12,17,21,26-Hexaazaoctacosane Tetrahydrochloride. *Molbank* **2018**, *2018* (1), M981. https://doi.org/10.3390/M981.

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