

# Luminescent complexes for optoelectronics

## LMCO group

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[https://vk.com/lmco\\_group](https://vk.com/lmco_group)

<https://colab.ws/labs/461>



# Team 2024

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Aleksandra Paderina, PhD student

Elena Grachova, Professor

# Research

Design and synthesis of luminescent complexes of transition metals, both mono- and polynuclear, and control assembly of highly organized supramolecular systems

Prediction of the probability of intra- and intermolecular interactions

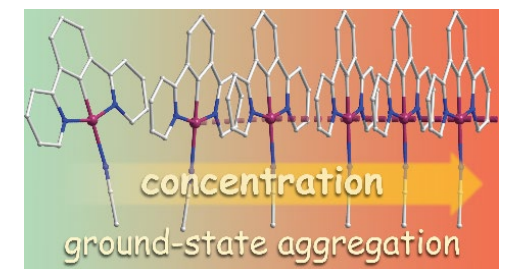
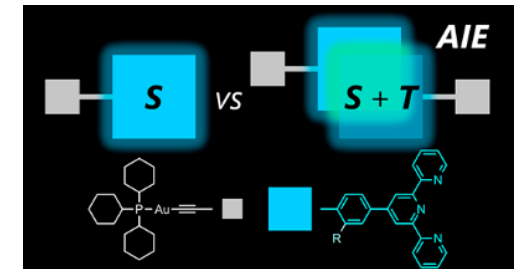
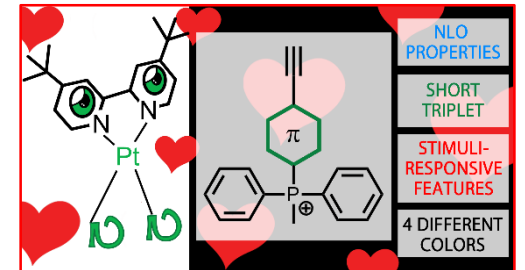
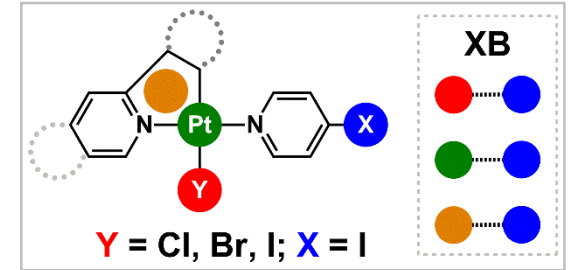
Metal selection

Ligand environment design

Introduction of functional groups to the periphery of the ligand environment

Complex of given composition and spatial structure

Functional supramolecular system



# Applications

pH measurement  
and oxygen mapping at  
the micro- and nanoscale

Singlet oxygen generation

Preparation of nanohybrid  
composites

Photo catalysis

Temperature  
measurement of micro-  
and nano-objects

Nanoparticle tracking

Flaw detection at the  
micro- and nanolevel

*Stimuli Responsive*  
materials

Determination of the  
concentration of ions in a  
solution

Photonics

Creation of luminescent  
materials

Creation of electro-  
luminescent devices

White light generation

Molecular electronics

Solar energy conversion

Light conversion and  
harvesting



# Partners and cooperation



General and Inorganic  
Chemistry division

Physical Chemistry  
division

Analytical Chemistry  
division

Polymer Chemistry  
division

Physical Organic  
Chemistry division



IOPC KSC RAS

ITMO, International Research  
Center for Nanophotonics and  
Metamaterials (New PhysTech)

Center for Collective Use  
'Analytical Center for Nano- and  
Biotechnologies of SPbPU'

Razuvaev Institute of  
Organometallic Chemistry, RAS



Russian-German Laboratory  
HZB BESSY II



# Financial support

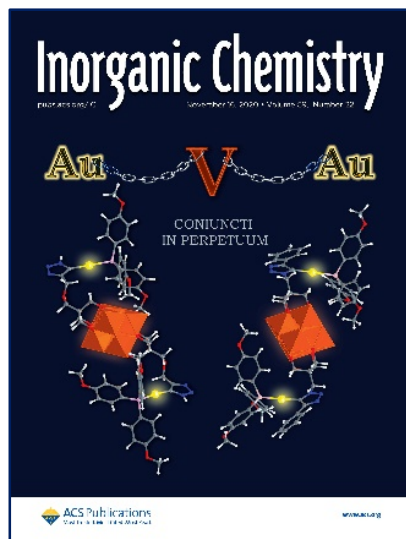
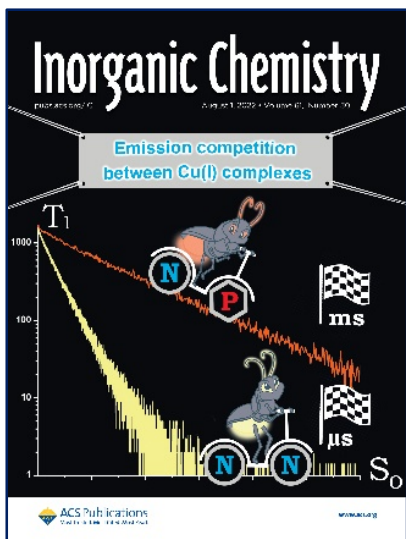
RSF grant 21-13-00052 'Functional hybrid molecular systems based on transition metal complexes'

RSF grant 22-23-00287 'The novel class of molecular emitters: bis-alkynyl gold(I) complexes featuring intramolecular charge transfer'



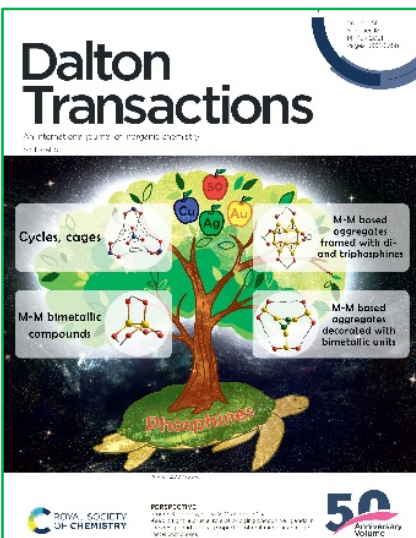
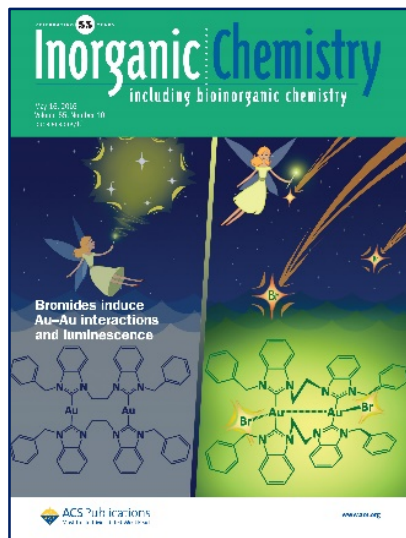
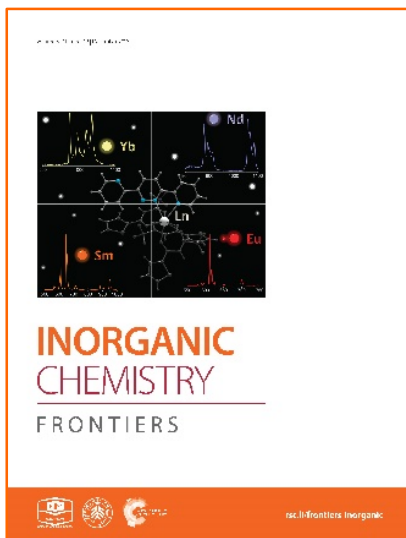


# Publications



Inorganic Chemistry Frontiers  
Molecular Systems Design & Engineering  
Dalton Transactions  
CrystEngComm

Inorganic Chemistry  
The Journal of Physical Chemistry C  
Organometallics



Angewandte Chemie IE  
Chemical Science  
Chemistry A European Journal  
ChemPlusChem  
European Journal of Inorganic Chemistry

Dyes and Pigments  
Molecules