

Luminescent complexes for optoelectronics

LMCO group

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https://vk.com/lmco_group

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



Team 2023

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Anastasia Dolmatova, Bachelor
Dmitriy Snetkov, Bachelor

Danila Sumovsky, Bachelor
Stefania Safronova, Bachelor
Evgenia Abramova, Master



Alexandra Paderina, PhD student
Elena Grachova, Professor
Maxim Luginin, PhD student

Victoria Khistyayeva, PhD student

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

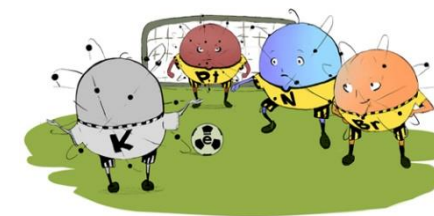
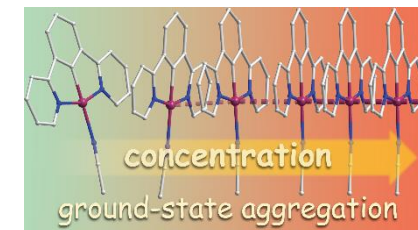
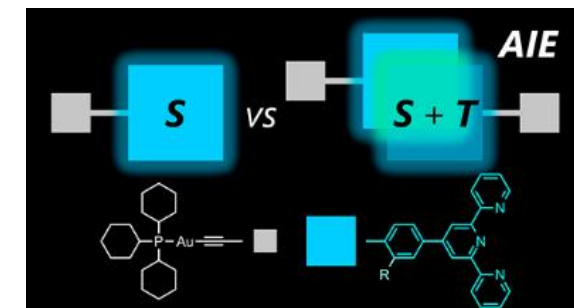
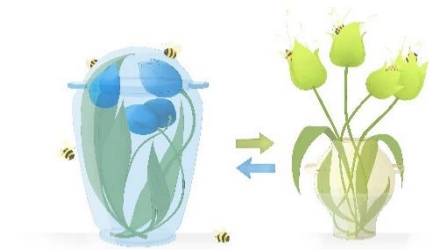
Metal selection

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

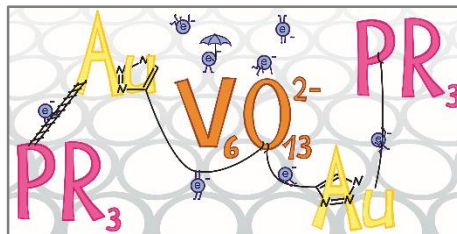
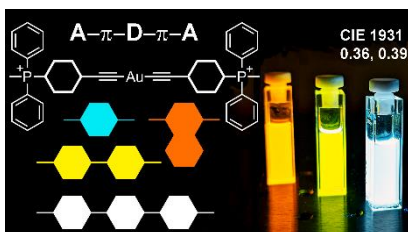
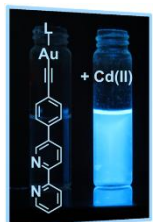
White light generation

Molecular electronics

Solar energy conversion

Light conversion and
harvesting

Methods and instruments



Inorganic synthesis

Organic synthesis

NMR spectroscopy

Mass-spectrometry

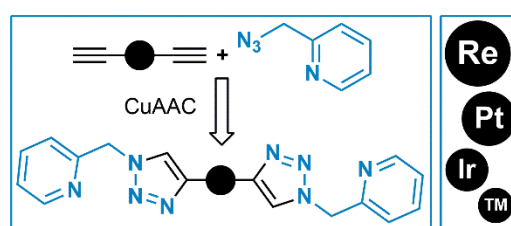
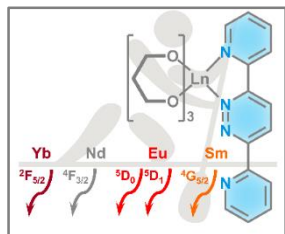
FTIR spectroscopy

Single crystal XRD and
PXRD

XPS spectroscopy

UV-vis spectroscopy

Fluorescence spectroscopy



Partners and cooperation



General and Inorganic
Chemistry division

Physical Chemistry
division

Analytical Chemistry
division

Polymer Chemistry
division

Physical Organic
Chemistry division



Saint-Petersburg
State
University
Research Park



IOPC KSC RAS

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

Razuvaev Institute of
Organometallic Chemistry, RAS



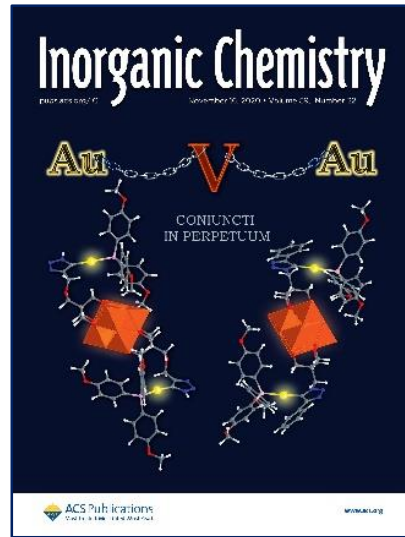
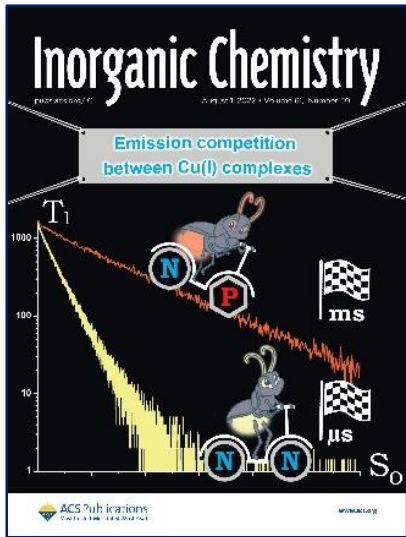
Russian-German Laboratory
HZB BESSY II



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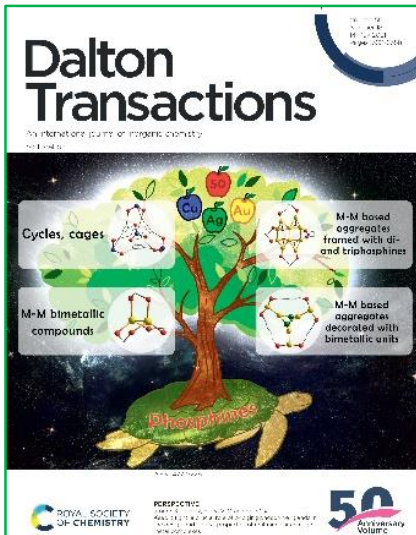
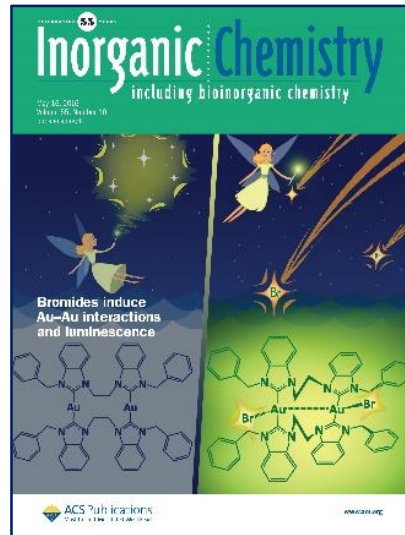
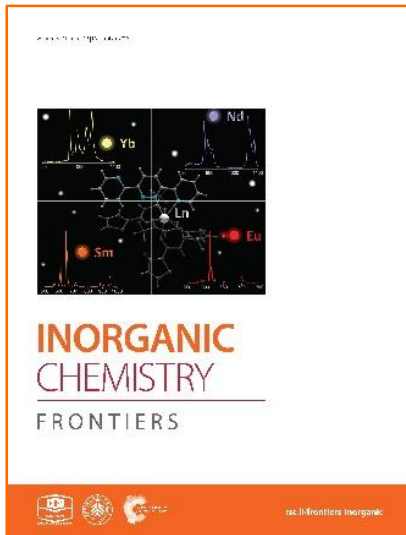


Publications



Inorganic Chemistry Frontiers
Molecular Systems Design & Engineering
Dalton Transactions
CrystEngComm

Inorganic Chemistry
The Journal of Physical Chemistry C
Organometallics



Angewandte Chemie IE
Chemistry A European Journal
European Journal of Inorganic Chemistry

Dyes and Pigments
Molecules