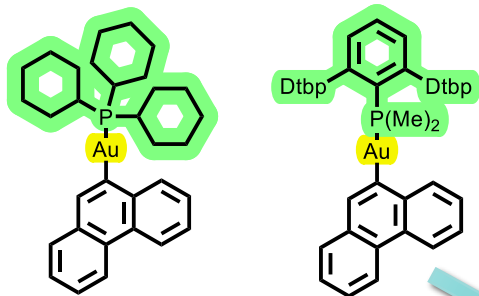


Supramolecular LUMinescent Chemosensors for Environmental Security

Effect of Polymer Nanofiber Matrix on the Photophysical Properties of Luminescent Oxygen Sensors



Encapsulation of Au(I) complexes in polymer nanofibers (PLA, PS, PCL)

Characterization of Au(I) complexes and polymer materials

Evaluation of sensor properties and singlet oxygen production

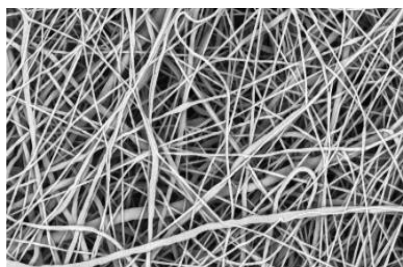
Aims:

- To evaluate the influence of the polymer matrix on the photophysical properties of Au(I) complexes
- To comprehensively characterize the luminescence properties of the polymer materials and Au(I) complexes

Outcome:

- Phosphorescence of Au(I) complexes in polymeric materials was sensitive to changes in oxygen concentration in air
→ Nanofibers can serve as a suitable matrix for sensor applications
- Nanofibers generated singlet oxygen upon UV light irradiation

SEM image of PCL nanofibers



10 μm

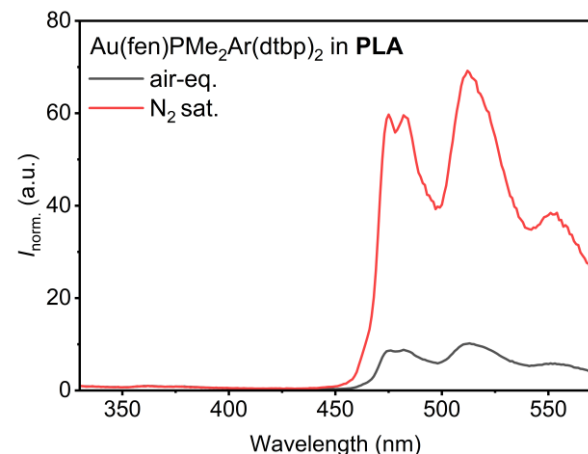
UV irradiation of PS nanofibers

Atmospheric oxygen

Nitrogen flow



- Absorption, excitation, emission spectra
- Luminescence lifetimes
- Quantum yields of luminescence
- Luminescence of singlet oxygen at 1270 nm



Emission spectra of the Au(I) complex encapsulated in PLA fiber membrane, recorded under air-equilibrated and N₂ saturated conditions, $\lambda(\text{exc.}) = 310 \text{ nm}$

Robert WILLIMETZ

Home Group: Prof. Aleš Růžicka, Charles University, CZ - WG1

Host Group: Prof. Laura Rodríguez, Universitat de Barcelona, ES - WG2

Period: 01. 05. 2026 to 31. 05. 2026