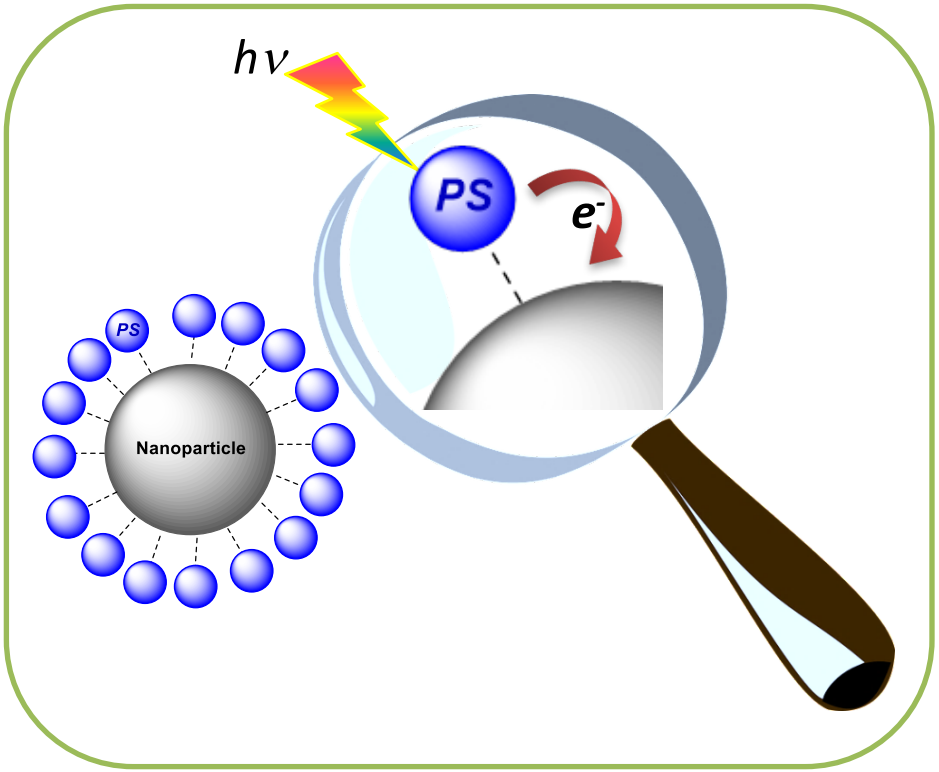
Immobilization of Photosensitizers on Semiconductor Surfaces

Starting date: August 2018 or later
Suitable for: Master thesis

The project will be done in collaboration with Dr. Sonia Dsoke (IAM - ESS).

Semiconductor nanoparticles are considered appealing catalysts, since they combine high surface area with excellent stability and an easy recovery.They have been used successfully as photocatalysts, [1] however the band-gap of most of them is too high in energy to absorb visible-light directly. When the semiconductor nanoparticle is decorated with a ligh-harvesting antenna or photosensitizer (*PS*) and an efficient electron transfer occurs, the energy of light is sufficient to excite the active semiconductor. Heterogeneous molecular photocatalysis provides a potential opportunity to mimic natural photosynthesis with high efficiency. [2]



Your project:

@ IOC

- Synthesis of photosensitizer(s) based on organometallic complex(es);
- Immobilization on semiconductor nanoparticles (e.g. TiO_2);
- Application in photocatalysis.

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- Complete electrochemical investigation of the photosenitizer(s) and the decorated nanoparticles.

[1] X. Liu, S. Inagaki, J. Gong *Angew. Chem. Int. Ed.* **2016**, *55*, 14924 – 14950;
[2] O. Ishitani *Top. Curr. Chem.* **2010**, *303*, 151-184.