

**Department of Inorganic and Coordination Chemistry  
(Faculty of Chemistry, Nicolaus Copernicus University in Torun)**

**Position:** Scholarship grantee/PhD student

**Project title:** Mechanistic clarification of the interaction of nanoparticles and nanoscale coordination compounds at the interface of multiphase chemical and medicinal related processes

**Requirements:**

1. Master degree in Chemistry;
2. Good background in inorganic/bioinorganic chemistry;
3. Experience with kinetic and mechanistic studies;
4. High motivation to perform independent research work;
5. Ability to work in a scientific team;
6. Fluent in spoken and written English.

**Tasks:**

1. Mechanistic studies on the application of nanoparticles and nanoscale coordination compounds in substitution and redox controlled processes.
2. Application of X-ray, SEM, TEM, EDX, ESI-MS and DLS techniques to follow changes in the structural pattern of nanoscale coordination compounds.
3. Synthesis and characterization of nanoscale gold(I) carbene complexes, and mechanistic studies on their ligand exchange reactions.
4. Synthesis of nanoparticles of the type MO, M<sub>2</sub>O<sub>3</sub> and M<sub>3</sub>O<sub>4</sub> for M = Fe, Mn and Cu.
5. Modification of metal oxide nanoparticles via ligand exchange reactions on the surface of selected nanoparticles.
6. Systematic studies on the influence of different stabilizers, ultrasound and temperature on the size of the synthesized coordination compounds, their crystal structure, shape and dispersity.

**NCN call for proposals type:** OPUS 19 – ST4

**Deadline for the submission:** February 7, 2021

**Date of the contest settlement:** February 15, 2021

**Form of submission:** e-mail

**Contact person:** Prof. Dr. h. c. mult. Rudi van Eldik, e-mail: rudi.vaneldik@fau.de

**Scholarship:** PLN 3,000 (gross) per month for 3 years

**Commencement:** March 1, 2021

**Required documents:**

- Letter of motivation (optional)
- CV
- Copy of the master's diploma with supplement
- Opinion of the academic supervisor
- Documentation of scientific achievements
- Declaration of consent to the processing of personal data contained in the application for the needs of the recruitment process, in accordance with Regulation (EU)2016/ 679 of the European Parliament and of the Council (Journal of Laws UE L 119/1)