

Competition notice

Project title: Highly Lewis acidic metal dication salts with weakly coordinating anions as efficient catalysts for transformations of olefins and alkynes.

Principal Investigator: dr Przemysław J. Malinowski

Project description The main goal of the project is thorough investigation of the role and capabilities of group II and Zn metal cations with extraordinarily high Lewis-acidic character, provided by weakly coordinating anions, in catalytic transformation of hydrocarbons with double and triple C-C bonds. Tasks within the project include synthesis and characterization of potential catalysts and testing their performance in key organic transformations. PhD students will participate in most research tasks within the project, in particular in the synthesis of compounds containing highly reactive metal cations, their thorough characterization including elucidation of crystal structure, interpretation of oscillation and NMR spectra, determination of thermal stability. The responsibility of the PhD student will also be testing of reactivity of the obtained species towards unsaturated hydrocarbons, including characterization of the products obtained (including their structure) and participation in elucidation of reaction based on the combination of experimental data and modelling using quantum chemical methods.

Requirements

- MSc degree in chemistry, chemical engineering, physics or related science
- experience in laboratory work, including chemical synthesis in inert conditions
- knowledge of key techniques for characterization of chemical compounds: oscillation spectroscopy, NMR spectroscopy; experience in diffraction techniques for crystal structure determination will be an advantage
- good knowledge of English

Discipline: chemical sciences

Admission limit: 1

Recruitment schedule

- registration in the Internet Registration of Candidates, referred to as "IRK", submitting an application to the IRK: 23.11.2020-10.12.2020
- qualification procedure: 14-17.12.2020
- announcement of the ranking list: until 21.12.2020
- accepting documents from qualified candidates: 22.12.2020 – 27.01.2021 until 2 PM
- announcement of the list of accepted candidates: until 31.01.2021

Recruitment fee

150 PLN

Form of the selection procedure

Evaluation of the following elements shall be taken into account in the selection process:

- 1) scientific achievements of candidates
- 2) scientific activity of the candidate based on a CV or resumé, documented with scans of materials attached to the application for admission to the School;

3) interview with the candidate;

4) competence to do research tasks within the project as based on the documents provided and the interview.

Language of the selection process, including the interview

The interview shall be carried out in Polish or English – in accordance with the candidate’s preferences presented in IRK. If the Polish language is selected, the interview may include parts in English.

Required documents

The candidate shall submit the application for admission to the School only in IRK. It shall include:

- 1) the application for admission to the Doctoral School;
- 2) scan of a diploma of completion of the long-cycle Master’s degree programme or second-cycle programme or an equivalent diploma obtained under separate regulations or –in the case of candidates pursuing education within the European Higher Education Areas –a declaration that the diploma or certificate of obtaining a Master’s degree shall be provided by 27 January 2021, in the case of holding a diploma equivalent to the diploma of completion of the long-cycle Master’s degree programme or second-cycle programme, the candidate shall justify this equivalence;
- 3) a resumé or curriculum vitae containing information about scientific activities, including scientific interests and scientific achievements during five calendar years preceding the submission of the application, subject to § 18 s. 5, in particular publications, research and organisational work in scientific associations, participation in scientific conferences, participation in research projects, awards, distinctions, research internships, completed training courses on research skills, science popularisation activities, activities in bodies representing scientific societies, professional career;
- 4) scans of materials confirming scientific activities referred to in the resumé or CV;
- 5) a document confirming the command of English at least at B2 level or declaration about the command of English to the extent enabling the education in the school;
- 6) a scan of the declaration of the supervisor candidate about their willingness to be the candidate’s supervisor and the number of doctoral students, for whom they are appointed as the supervisor, in accordance with the template determined by the Rector; additionally, the candidate can enclose a scan of the opinion of the supervisor candidate and opinions of other academic staff on the candidate and their scientific activities or the proposed research project;
- 7) one photograph of the candidate’s face, allowing their identification;
- 8) declaration whether the candidate is or was a doctoral student or participant of doctoral studies, and if yes – title of doctoral dissertation or the research project prepared by the candidate, as well as first name and surname of the academic tutor or the supervisor;
- 9) declaration on familiarising themselves with the content of the Resolution, as well as Article 40 and Article 41 of the Code of Administrative Procedure;
- 10) scans of transcripts of records of the first and second cycle programmes, the long-cycle Master’s degree programme or equivalent documents (e.g. diploma supplement);
- 11) abstract of the master’s thesis or draft master’s thesis in English (up to 3,000 characters with spaces);

Evaluation criteria

- 1) Scientific achievements of the candidates, including publications in scientific journals and periodicals (50% of the final score):
 - 4 pts – candidate has an exemplary academic achievement;
 - 3 pts – candidate has a very good academic achievement;
 - 2 pts – candidate has a good academic achievement;
 - 1 pts – candidate has a mediocre academic achievement;
 - 0 pts – candidate has no academic achievement.

- 2) Accomplishments resulting from scientific research, scholarships, domestic or foreign awards and scientific experience, workshops and scientific training, participation in research projects (20% of the final score):
 - 4 pts – outstanding accomplishments (e.g. training in leading foreign organisations, prestigious awards or international distinctions, workshops or trainings in leading scientific organisations, participation in international or foreign projects);
 - 3 pts – significant accomplishments (e.g. training in recognised foreign and domestic organisations, national awards or distinctions, foreign and domestic workshops or trainings, participation in domestic or foreign projects);
 - 2 pts – moderate accomplishments (local awards or distinctions, workshops or trainings, participation in academic projects);
 - 1 pts – mediocre accomplishments;
 - 0 pts – lack of accomplishments.

- 3) Competences to carry out particular tasks in the research project (30% of the final score):
 - 3 points – the candidate has very good competences;
 - 2 points – the candidate has good competences;
 - 1 point - the candidate has mediocre competences;
 - 0 points – lack of competences to work in the research project

Education program

The education lasts 4 years. It includes obligatory classes (no more than 300 hours in total during the whole period of education) and the implementation of an individual research program, carried out under the supervision of a supervisor. Beginning of education – March 1, 2021.

Scholarships

The scholarship is PLN 3500 gross-gross (for the duration of the research project). After its completion, PhD student receives a scholarship in the amount provided for in the general regulations.