

Competition notice

Project title: Impact of atomic composition and strong coupling on generation of hot charge carriers in metal nanoparticle-adsorbate structures

Principal Investigator: Tomasz Antosiewicz

Project description: The scholarship holder will perform research at the intersection of electrodynamics, materials engineering, and condensed matter by studying mechanisms of generating hot charge carriers in nanostructures composed of metallic nanoparticles. The goal of the project is to understand how the atomic content and structural properties of nanoparticles as well as strong coupling to plasmonic excitations affect hot carrier generation. The theoretical and numerical work will be carried out with foreign partners based at Chalmers University of Technology in Sweden.

Requirement

- basic knowledge of electrodynamics, plasmonics, nanophotonics, and condensed matter
- experience of computational methods in electrodynamics and/or density functional theory
- good knowledge of programming in C/C++ or Python, optionally also scripting in Matlab
- good command of spoken and written English

Discipline: physical sciences

Admission limit: 1

Recruitment schedule

- registration in the Internet Registration of Candidates, referred to as "IRK", submitting an application to the IRK: 23.11-10.12.2020
- qualification procedure: 14.12-17.12.2020
- announcement of the ranking list: until 21.12.2020
- accepting documents from qualified candidates: 22.12.2020-27.01.2021. before 14.00
- 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) the research project proposed by the candidate;
- 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;

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 27.01.2021 until 14:00, 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 description of the initial research project proposal in English;
- 4) 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;
- 5) scans of materials confirming scientific activities referred to in the resumé or CV;
- 6) 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;
- 7) 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;
- 8) one photograph of the candidate's face, allowing their identification;
- 9) 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;
- 10) declaration on familiarising themselves with the content of the Resolution, as well as Article 40 and Article 41 of the Code of Administrative Procedure;
- 11) 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);
- 12) abstract of the master's thesis or draft master's thesis in English (up to 3,000 characters with spaces);
- 13) other documents in form of scans: minimum one recommendation letter

Evaluation criteria

The scholarship is awarded according to the National Centre of Science Regulations on Awarding Scholarships in NCN Funded Research Projects, as detailed in the Annex to resolution no 25/2019 of the Council of the NCN on the 14th of March, 2019.

The recruitment committee shall evaluate the candidates' research achievements, their research-related achievements and competencies as regards specific tasks in the research project, expressed as a point score:

- the candidate's research achievements, including publications in prestigious academic press /journals (50% of the final score):
 - 4 points - outstanding;
 - 3 points - very good;
 - 2 points - good;
 - 1 points - poor;
 - 0 points - no scientific achievements.
- research-related achievements, scholarships, awards and research experience gained in Poland or abroad, research workshops and training courses, participation in research projects (20% of the final score):

- 4 points - outstanding (e.g. scholarships, fellowships at leading foreign research centres, prestigious international prizes or awards, workshops or training courses at the leading research centres, participation in international or foreign projects);
- 3 points - significant (scholarships, fellowships at good Polish and foreign research centres, national prizes or awards, domestic or foreign workshops or training courses, participation in Polish or foreign projects);
- 2 points - moderate (local prizes or awards, workshops or training courses, participation in university projects);
- 1 points - poor achievements;
- 0 points - no achievements.
- the candidate's competence to carry out specific tasks in the research project (30% of the final score):
 - 3 points - very good;
 - 2 points - good;
 - 1 points - poor;
 - 0 points - no competence.

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 1st, 2020.

Scholarships

During the four years of study, the PhD student receives a scholarship in the amount of PLN 5000 gross-gross for the first two years of studies (before the mid-term evaluation) and PLN 5000 gross-gross in the next two years after the mid-term evaluation. The net scholarship may be lower due to compulsory employer/employee social security contributions as well as direct taxes.