

Job details [Print page](#)

Place of work

Team 28 "Catalysis for sustainable energy production and environmental protection, CatSEE",
INSITUTE OF PHYSICAL CHEMISTRY PAS

Funding institution

NATIONAL SCIENCE CENTRE

Project description

Project title, type and project number

National Science Center, OPUS-20 Project No. 2020/39/B/ST5/00076 entitled "Nanoengineering of multicomponent metal-free carbonaceous materials for bio-oil upgrading through ultrasound-assisted selective redox photo-catalysis in continuous-flow reactors"

Project leader

dr hab. inż. Juan Carlos Colmenares Q. prof. IChF-PAN

Description

This project aims to develop a novel method for the transformation of lignin and chitosan into valuable metal-free nitrogen(N)- and/or sulphur(S)-containing carbonaceous photocatalysts. New catalytic materials possessing excellent sonophotocatalytic redox properties to assist continuous flow photo-redox processes in obtaining high-value chemicals from bio-oil-based molecules upgrading. The objective is to prepare metal-free carbon-based photocatalytic materials through the physicochemical effects of low/high-frequency sonication (e.g., effective mass transfer, microstreaming, cross-linked radical polymerization, etc, effects often inaccessible through conventional methods) as a promising pre-treatment step before ending the synthesis of the materials under hydro(solvo)thermal conditions. It will be carried out the study of the physicochemical properties of carbon-based materials (before and after (sono)-(photo)-catalytic test reactions), and testing them in the selective sonophotocatalytic oxidation and C-C sonophoto-reductive coupling of bio-oil-inspired model compounds (in flow liquid-phase) as a futuristic approach of bio-oil-based molecules valorization. Systematic basic research of the effect of green and unconventional source of ultrasonic energy on the pre-treatment of chitosan (precursor of C, N, O) and lignin (precursor of C, S, O, aromaticity) and its effect on the final material obtained after optimization of hydro(solvo)thermal conditions, will be carried out. To get insight into the mechanism of ultrasound-assisted hydro(solvo)thermal method, the whole spectrum of materials characterization techniques and basic kinetic studies and photocatalysts' stability/recycling studies (using the appropriate flow (sono)-(photo)-reactors) will be carried out. The use of ultrasound-based procedures offer a facile, versatile synthetic tool for the preparation of nanophotocatalysts, often inaccessible through conventional methods.

Job description

Number of vacancies

1

Key responsibilities include

The successful candidate will investigate issues related to the synthesis of multicomponent metal-free carbonaceous materials by ultrasound-assisted hydro(solvo)thermal method for bio-oil upgrading through ultrasound-assisted selective redox photo-catalysis in continuous-flow reactors.

Basic responsibilities are as follow:

- Scientific initiative and contribution through regular reporting and publishing, as well as presenting at group meetings, national and international conferences;
- Providing help and supervision to junior members of the group;
- Contribution to the efficient functioning of the lab, including necessary organizational tasks.

Offer

Position in the project

Postdoctoral researcher

Job type

Type of contract: temporary, Status: full-time employment, Hours Per Week: 40

Salary

10 000 PLN gross/month

Position starts on

The earliest: 01.01.2022 ; The latest: 01.03.2022

Maximum planned period of contract

24 months (with prolongation option depending on funds and project needs).

We offer

We offer a post-doctoral position (full-time employment) in the Institute of Physical Chemistry PAS with a gross salary of 10 000 PLN per month financed from the NCN OPUS-20 Project No. 2020/39/B/ST5/00076. International cooperation with experienced researchers. Autonomous position in the professional and dynamically developing innovative team. The successful candidate is expected to start work within the project: the earliest 01.01.2022, the latest 01.03.2022. 100% of the work time of the postdoc researcher will be devoted to the realization of the proposed project.

Career development prospects at IPC PAS

The successful candidate will benefit in form of new knowledge and methods added to his/her toolbox. The project deals with photocatalysis, sonochemistry, flow reactors, nanomaterials, and physical chemistry phenomena in general, so any profile of candidate will find some new knowledge to be gained upon realization of the project.

We plan to publish the results of the work in high impact factor journals.

The successful candidate will be able to take advantage of all programs in the IPC PAS, including Young Scientists of IPC PAS competition and Mobility of Young Scientists of IPC PAS competition.

Institute provides an opportunity to participate in ERASMUS+ programme.

Requirements

Scientific discipline

Chemistry, chemical engineering, catalysis, or similar fields.

Scientific profile of a candidate

Recognised Researcher (R2)

Requirements

1. PhD degree in chemistry, chemical engineering, catalysis sciences, obtained no earlier than 7 years before the starting year of the employment in the project (this period might be longer due to family reasons (according to NCN rules).
2. Publication record and rich (mobility) scientific experience.
3. Ability to work independently as well as in a group.
4. Significant research achievements in carbon-based photocatalysis (materials synthesis and characterization), nanostructured materials synthesis, organic chemistry synthesis in particular redox processes, sonochemistry,
5. Familiar with heterogeneous catalysts' characterization techniques such as: microscopic imaging (SEM and HRTEM), XPS, XRD, chemisorption techniques, DR UV-Vis, electrochemical impedance spectroscopy, cyclic voltammetry, photoluminescence as well as AFM/STM, FTIR and Raman spectroscopy techniques. Moreover, experience is desired in sonochemistry and flow reactors design/modeling.
6. Ability to communicate fluently in English (written and spoken).
7. Strong motivation to work and pursue scientific questions, creativity, and analytical thinking.
8. Research experience in related fields will be advantageous.
9. Experience in leveraging best practices from research community;
10. Experience in supervising and teaching students.

Key assessment criteria

The Commission will take into account the following criteria:

- a) competencies of candidates for specific tasks in a research project,
- b) previous scientific achievements of candidates,
- c) awards and distinctions of the candidate resulting from the conducted research.
- d) presented opinions via. recommendation letters.

The commission evaluates applications on a point scale.

Required documents

- employment application,
- cover letter,
- professional curriculum vitae,
- university degree diploma,
- scan or photocopy of candidate's MSc and PhD degree,
- a list of scientific achievements (publications, patents, conference presentations, etc.),

- at least two letters of recommendation written by well-known scientists in the field.

Recruitment procedure

- Complete application should include the following items: employment application, professional curriculum vitae, university degree diploma and PhD certificate, a list of scientific achievements (publications, patents, conference presentations, etc.), at least two letters of recommendation written by well-known scientist in the field. The application deadline is on **23rd of September 2021**.
- Top candidates will be invited for an on-line or in person interview (on **30th of September 2021**). Good command of English is required. We reserve the right to contact and reply to only selected candidates.
- A position will be offered to the person who obtains the highest number of points.
- The results of the recruitment will be announced on **08th of October 2021**.
- Employment will take place in accordance with the Employment policy of the Institute of Physical Chemistry PAS <https://ichf.edu.pl/files/csr/ipc-procedures.pdf> and the provisions of the competition documentation of the National Science Center (NSC) for the OPUS-20 contest https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2020/uchwala95_2020-zal1.pdf#page=43
- The incomplete applications will be not considered.
- The results of the competition are made public.
- Candidates who have been issued a negative opinion by the Competition Committee or candidates not selected for employment have the right to appeal against the results of the evaluation. The appeal shall be lodged with the Director of the Institute within 7 days from the date of receipt of the appropriate information. The decision of the Director of the Institute shall be final.
- If the top candidate does not sign the contract, due to the resignation, we reserve the right to choose the next candidate from the ranking list.

Additional information

Candidate needs to meet formal requirements:

- a) at the time of employment, he/she do not receive any other remuneration from the NCN funds in any form;
- b) the project manager was not a supervisor / auxiliary supervisor in his/her doctoral thesis;
- c) during the period of employment, he/she does not receive any other remuneration on the basis of an employment contract with any employer (also applies to an employer having its registered office outside the territory of the Republic of Poland)

How to Apply: Send application directly to rekutacja@ichf.edu.pl;

IMPORTANT! email subject: "**Recruitment no.25/2021**"

Deadlines

Application deadline

23rd of September 2021 17:00 pm

Deadline for the settlement of the competition

08th of October 2021



Send the application via the "Apply to the position" button, or to rekrutacja@ichf.edu.pl with the title "**Recruitment no. 25/2021**".

Apply to the position

By submitting the application you consent to the processing of your personal data in the recruitment process.

The controller of your personal data is the Institute of Physical Chemistry of the Polish Academy of Sciences with its registered office in Warsaw, NIP: 5250008755 (the "Institute"). The Institute will process your data for the purpose of carrying out scientific and research activities, providing services and contact with the Institute, on the basis of a contract (in connection with the performance of the contract or in order to take action on your request before the contract is concluded – Article 6, paragraph 1, letter b) of GDPR), the legitimate interest of the Institute (Article 6, paragraph 1, letter f) of the GDPR) and legal provisions (Article 6, paragraph 1, letter c) of the GDPR) - depending on the circumstances.

You have the right to: request access to your data, receive a copy of it; rectify (correct) it; delete it; limit its processing; transfer it; lodge a complaint to the supervisory body; withdraw your consent for processing at any time (withdrawal of consent does not affect the lawfulness of the processing carried out prior to its withdrawal) or to lodge an objection to data processing. More information is available on the Institute's website.

https://ichf.edu.pl/theme/ichf/pliki/RODO_klauzula_informacyjna.pdf