FORM FOR EMPLOYERS

INSTITUTION:	Nicolaus Copernicus University in Torun, Faculty of Chemistry
CITY:	Toruń
POSITION:	assistant professor (adjunkt) - research staff (adiunkt/adiunktka - grupa badawcza)
DOMAIN:	The Field of Exact and Natural Sciences - Chemical Sciences,
POSTED:	2026-09-18
EXPIRES:	2026-10-19
WEBSITE:	http://www.umk.pl/en/jobs/?task=offer&action=one&id=4976
KEYWORDS:	theoretical chemistry, quantum chemistry, computational chemistry, molecular spectroscopy, IR and UV-Vis spectroscopy, molecular complexes and clusters, intermolecular interactions, astrochemistry, spectroscopic data analysis

DESCRIPTION (FIELD, EXPECTATIONS, COMMENTS):

The competition is open to persons who meet the conditions set out in Article 113 of the Act of 20 July 2018 - Law on higher education and science (Journal of Laws of 2018, item 1668) and the following qualification criteria:

1. Required: PhD degree in chemistry, physics, or a related discipline.

2. Required: documented scientific achievements in molecular spectroscopy, theoretical and computational chemistry, or a related field, demonstrated by publications in international peer-reviewed scientific journals.

3. Required: documented experience in the analysis of experimental spectroscopic data or in quantum-chemical calculations.

4. Required: willingness to work at the experiment-theory interface and to combine the interpretation of spectroscopic data with the results of quantum-chemical calculations.

5. Required: practical knowledge of software used in quantum chemistry and/or tools for spectroscopic data analysis.

6. Required: programming or scripting skills for the automation of calculations, data processing, and data analysis.

7. Preferred: documented experience in both experimental molecular spectroscopy and quantum-chemical calculations.

8. Preferred: experience in at least one of the following areas: modelling of molecular complexes and clusters, analysis of intermolecular interactions, computational vibrational spectroscopy, modelling of excited states and electronic spectra, anharmonic vibrational calculations, FTIR/UV-Vis spectroscopy, or astrochemistry.

9. Preferred: experience working in Unix/Linux environments and performing calculations using HPC systems.

10. Required: very good command of written and spoken English.

11. Required: ability to conduct research independently and as part of a team, together with strong motivation for scientific work.

We offer employment as a research Assistant Professor (postdoctoral position) in a research project funded by the National Science Centre, Poland (NCN), under the OPUS 30 programme.

The candidate must fulfil the NCN requirements for researchers employed in postdoctoral positions within OPUS 30 projects. In particular, the candidate must hold a PhD degree obtained either in the year of employment in the project or within the 12 years preceding 1 January of the year of employment in the project. This period may be extended in cases specified in the applicable NCN regulations.

The candidate must have obtained their PhD degree from an institution other than Nicolaus Copernicus University in Toruń. Alternatively, the candidate must have completed a continuous and documented research stay of at least 9 months at an institution other than NCU and in a country other than the country in which the PhD degree was obtained. The research stay may have been completed during doctoral school education, doctoral studies, or after obtaining the PhD degree, in accordance with NCN regulations.

During the period of employment in the postdoctoral position, the employee may not receive any other remuneration from the direct costs of research projects funded by NCN, may not be

employed by another employer under an employment contract, and may not receive pension benefits or equivalent benefits in Poland or abroad.

Principal Investigator: Prof. Małgorzata Biczysko, University of Wrocław

Leader of the NCU part of the project: Dr Dariusz Kędziera

Project title: *Integrated IR-UV-Vis Spectroscopic Fingerprints of Simple Molecules in Interstellar Ices: From Monomers and Clusters to Micro-Grains in the Interpretation of JWST Spectra*

The project combines low-temperature experimental spectroscopy with advanced quantum-chemical calculations. Its aim is to determine how intermolecular interactions, aggregation, and the local environment in interstellar-ice analogues affect the structures, IR and UV-Vis spectra, and photochemical processes of simple astrochemically relevant molecules.

The part of the project carried out at NCU involves quantum-chemical modelling of molecules, molecular complexes, and clusters, as well as interpretation of experimental spectroscopic data obtained in collaboration with the team at the University of Wrocław. An important component of the research will be the direct comparison of experimental IR and UV-Vis spectra with computational results and the identification of the effects of molecular structure, aggregation, and local molecular environment on the observed spectroscopic properties.

Responsibilities

1. Advanced processing and analysis of experimental FTIR and UV-Vis spectra of matrix-isolated molecules and interstellar-ice analogues.

2. Analysis of changes in band positions, intensities, and shapes across experimental series, including, as appropriate, band deconvolution, difference-spectrum analysis, and the construction of intensity-change maps.

3. Systematic comparison of experimental IR and UV-Vis spectra with quantum-chemical predictions in order to assign spectral bands and identify the structures of molecules, molecular complexes, and clusters.

4. Performance of selected quantum-chemical calculations for molecules, molecular complexes, and clusters, including, among others, geometry optimisations and calculations of vibrational and electronic properties.

5. Modelling the effects of intermolecular interactions, aggregation, and the local molecular

environment on the structures and IR/UV-Vis spectra of the investigated systems.

6. Analysis and interpretation of photochemical processes occurring in matrices and interstellar-ice analogues through the identification of reactants, photoproducts, and structural changes based on combined spectroscopic and quantum-chemical data.

7. Development, improvement, and application of tools for automating calculations, processing computational results, and analysing spectroscopic data.

8. Participation in the development of organised libraries of molecular structures, spectra, and experimental and theoretical data generated within the project.

9. Close collaboration with the experimental project team at the University of Wrocław and with other members of the research team.

10. Preparation of scientific publications and presentation of research results at conferences, seminars, and scientific meetings.

We offer

- full-time employment;
- work in an interdisciplinary team combining experimental molecular spectroscopy with theoretical and computational chemistry;
- access to NCU computational infrastructure and national HPC resources;
- close collaboration with the experimental spectroscopy team at the University of Wrocław;
- opportunities to participate in scientific conferences and international collaborations;
- no teaching duties.

Salary:

PLN 210,000 per year, gross employer cost (total employment cost including full social-security and health-insurance contributions).

Estimated net salary: approximately PLN 9,250 per month.

Full-time employment.

Planned employment period: 1 December 2026 - 30 November 2027 with possible extension up to three years.

Planned starting date: 1 December 2026.

Required documents

- at least one letter of recommendation or contact details of at least one researcher who can provide a reference for the candidate.

Additional information

The leader of the NCU part of the project reserves the right to interview selected candidates.

The University reserves the right not to select any candidate.

Documents required:

- Cover letter

- Personal questionnaire for the person applying for employment (form to be downloaded)

- Professional curriculum vitae

- Copy of higher education diploma

- Copy of doctorate certificate

- Information about scientific, didactic and organizational achievements (abstract comprising candidate's most important areas of research, and scientific, educational, and other achievements)

- List of publications (including the publishing house/journal, year of publication, and page number)

- Declaration of consent to the processing of personal data contained in the job offer for the needs of the recruitment process, in accordance with the Regulation (EU) 2016/679 of the European Parliament and of The Council of 27 April 2016 (L119/1) (form to be downloaded)

- Declaration under art. 113 ust. 1 ustawy Prawo o szkolnictwie wyższym (o niekaralności) (Art. Paragraph 113 (1) of the Higher Education Act (of no criminal record)) (form to be downloaded)

- Declaration that Nicolaus Copernicus University in Toruń will be my primary employer once I have won the contest (form to be downloaded)

Documents should be submitted before 19.10.2026

The contest will be adjudicated no later than 18.11.2026

Your expected employment will commence on 1.12.2026

The university does not provide accommodation.

Please be informed that the person selected through the competition will be obliged to submit a certificate from the National Criminal Register with regard to offences specified in Chapters 19 and 25 of the Penal Code (including offences against sexual freedom and morality), in Article 189a and Article 207 of the Penal Code and in the Act on Counteracting Drug Addiction of 29 July 2005 (Journal of Laws of 2023, item 1939 and of 2022, item 2600), or for the corresponding offences defined in foreign law. The obligation to verify applies to a person whose tasks will be related to the protected activity referred to in Article 21. of the Act of 13 May 2016 on counteracting the threat of sexual offences and the protection of minors (Journal of Laws of 2024, item 560).

Pursuant to art. 24 paragraph 6 of the Act of June 14, 2024 on the protection of whistleblowers (Journal of Laws of 2024, item 928), information on the internal reporting procedure at the Nicolaus Copernicus University in Toruń is available at:
https://www.umk.pl/en/contact/internal-reporting/

POSTAL ADDRESS TO WHICH THE APPLICANT CAN SEND DOCUMENTS IF HE DOES NOT WANT TO USE THE ON-LINE SYSTEM:

Wydział Chemii UMK

Ul. Gagarina 7

87-100 Toruń

Forms to be downloaded: http://www.umk.pl/en/jobs/forms/