

Project title:

Quantum Entangled Photons for Probing the Dynamics of Organic Molecules

Position:

Scholarship Student

Number of positions: 1

City: Toruń

Website: <https://www.fizyka.umk.pl/en/>

Requirements:

- Master's degree in Physics, Photonics, or a related discipline.
- Knowledge and experience in the construction, optimization, and characterization of SPDC sources, single-photon experiments, and cryogenic measurements.
- Experience related to research on entangled two-photon absorption (ETPA) and the ability to work with advanced optical and measurement equipment.
- Experience in studies of interactions between heralded single photons and material systems such as, for example, color centers.
- Very good command of spoken and written English.

Description of duties:

The student's aim will be the construction, characterization, and optimization of entangled photon-pair sources based on spontaneous parametric down-conversion (SPDC) for applications in spectroscopic experiments. The student will conduct research on entangled two-photon absorption (ETPA) in organic molecules and color centers in diamond using single-photon experiments and cryogenic measurements. The research will also include the analysis of the spectral and spatial properties of photon sources and participation in the development of new experimental configurations.

Tasks:

- Construction, optimization, and characterization of SPDC sources for the generation of entangled photon pairs.
- Participation in ETPA spectroscopic experiments on organic molecules and color centers in diamond, including analysis of the obtained results.

Competition type: Opus 28

Field of science: ST

Deadline for submitting bids: 14 June 2026, 23:59 **Application form:** e-mail

Employment conditions:

Scholarship of PLN 5,000 per month for a period of up to 12 months.

Planned period of employment: **up to 12 months, 1 July 2026–30 June 2027**

Additional information:

The scholarship is awarded in accordance with the rules set out in the Regulations on the Award of Research Scholarships of the National Science Centre, adopted by Resolution No. 25/2024 of the Council of the National Science Centre dated 4 March 2024.

Required documents (please send these to the project manager's email address: kolenderski@fizyka.umk.pl, with the subject line 'Opus 28.1'):

- Cover letter
- CV
- Copies of obtained diplomas and certificates (if any)
- Copy or scan of candidate's publications (if any)
- Information about scientific awards, scholarships and other distinctions (if any)
- Description of current research activity (if applicable)
- Consent to the processing of personal data (https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.umk.pl%2Fuczelnia%2Fiod%2FKonkurs_EN.docx&wdOrigin=BROWSELINK).
- Certificate of student status

Applicants will be evaluated by a selection committee appointed by the Dean of the Faculty of Physics, Astronomy and Informatics. The committee will recommend the awarding (or rejection) of the scholarship no later than 15 June 2026.

Candidates will be notified of the outcome of the competition by e-mail.

In the event of resignation of the selected candidate, the right to indicate the next candidate from the ranking list is reserved.

All documents should contain the candidate's signature or its scan.

Language of application: Polish or English.