



European Research Council Advanced Grant SFINKS - 101142881

Research assistant position in the field of micro-Energy Harvesters in modern science centre CEZAMAT at the leading technical university in Poland – Warsaw University of Technology to realise tasks in the frame of the European Research Council Advanced Grant project **SFINKS** (Grant Agreement no: 101142881)

Position: **Research specialist**

Application Deadline: **20 June 2025 16:00 CET**

Please send applications together with documents by e-mail to: Tomasz.Skotnicki@pw.edu.pl

Responsibilities:

- Simulating and modelling micro energy generators (*piezoelectric energy harvesters*) that convert pressure and temperature fluctuations into electrical energy;
- Constructing multiphysics simulation models of temperature and bistable snap-through force, taking into account the material parameters of various piezoelectrics and different generator geometries;
- Implementing real atmospheric pressure/temperature fluctuations into simulation models;
- Defining material and topological requirements to ensure bistable membrane snap-through within a specified range of temperature/pressure variations;
- Simulating/modelling energy performance to determine the optimal generator dimensions;
- Determining the optimal working fluid and its volume to maximize energy output under identical pressure/temperature fluctuations;
- Supporting the manufacturing process through simulations that utilize experimental results from prototypes – determining the accuracy of simulation models based on measurement data;
- Design and fabrication of a "*meso*"-scale demonstrator, i.e. approx. 10mm, on silicon;
- Execution of technological processes (*with support of CEZAMAT process engineers*);
- Characterization of the demonstrator morphology (*optical microscopy, SEM, profilometry, ellipsometry*);
- Electrical characterization of the demonstrator;
- Comparative analysis of experimental results with simulation outcomes;
- Drawing conclusions aimed at avoiding errors and optimizing the final microscopic prototypes of the SFINKS generator;
- Simulation study aimed at improving the generator's performance, e.g., continuous operation, maximizing energy production;
- Preparation and submission of a grant proposal for a young researcher to a Polish or European scientific research funding system.

Candidates are required:

- 1) to have completed a higher education with a master's degree or equivalent in a technical engineering;
- 2) to have a very good knowledge of written and spoken English, allowing active participation in international scientific conferences, publication of scientific articles,

- research reports, free work with English scientific literature and submission of scientific grant applications, also taking into account international cooperation;
- 3) to demonstrate a scientific track record of at least 5 co-authored scientific publications in journals or conference proceedings in the field of energy harvesting or related areas;
 - 4) to have at least 2 years of experience and practical knowledge of multi-physical modelling in COMSOL;
 - 5) to have a scientific profile in the field of semiconductor technology and energy conversion physics proven by publications, participation in scientific projects and professional experience;
 - 6) to have knowledge of distributed/environmental energy harvesting devices;
 - 7) Have documented experience in the applications of piezoelectric materials;
 - 8) to possess experience in the organisation of research, preparation of documentation and procedures, preparation of scientific publications in English, preparation of research reports, archiving of models and simulation parameters;
 - 9) to demonstrate experience in conducting research, proven by a track record of publications and participation in scientific projects.

We offer:

1. Fixed-term employment, 16 months, 100% FTE;
2. Position starting date: September 1, 2025
3. Work in the SFINKS project (grant agreement: 101142881) funded by the European Research Council in frame of the Advanced Grant competition;
4. Work at a leading technical university in Poland;
5. Possibility of scientific development thought integration with a dynamic team carrying out cutting-edge research in a strategically important area;
6. Possibility to work in hybrid mode;
7. The opportunity to participate in trainings aimed at further development and improvement of qualifications;
8. Possibility of taking advantage from a group insurance package and a social benefits addressed to the Warsaw University of Technology employees (*co-financing of holidays, sports activities, language courses*)

Applicants are invited to submit a CV with their academic achievements (*publications listed chronologically from most recent to oldest*), a copy of their academic degrees by e-mail to:

Tomasz.Skotnicki@pw.edu.pl

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We reserve the right to contact only selected people. We do not return submitted documents.