FAroGels

MSCA Doctoral Network

DOCTORAL CANDIDATE POSITION

DC4 – Semiautomated supercritical CO_2 drying for reproducible structures

Position	DC4 - Semiautomated supercritical CO2 drying for reproducible structures
Project	FAroGels – Food-Grade Aerogels for Sustainable Food Systems
Funding programme	Horizon Europe – Marie Skłodowska-Curie Actions Doctoral Networks (HORIZON-MSCA-2025-DN-01-01)
Grant Agreement number	101312450
Recruiting/Host organisation	Superex, Pard Mühendislik ve Otomasyon Sanayi Ticaret Limited Sirketi, Konya, Türkiye
PhD awarding institution	Selçuk University, Department of Physics, Konya, Türkiye*
Type of contract	Fixed-term employment contract, 36 months
Job status	Full-time (100%)
Application deadline	09 December 2026, 23:59 (CET)
Expected start date	March 2027 (earliest)

There might be a change in **PhD awarding institution. The details are specified in the **"Institution-specific requirements"** section under the "please note" statement.*

About FAroGels

FAroGels – Food-Grade Aerogels for Sustainable Food Systems is a Marie Skłodowska-Curie Actions Doctoral Network funded by the European Union under Horizon Europe. The network brings together academic and non-academic partners with complementary expertise in food science and technology, materials science, biopolymer science, biotechnology, process engineering, analytical characterization, packaging and sustainable innovation. **FAroGels** aims to develop, characterize, and validate food-grade, bio-based, and biodegradable aerogels for sustainable food systems. The network will investigate how these highly porous materials can support more efficient food processing, improved food quality and safety, nutritional and sensory functionality, protection and delivery of bioactive compounds, and sustainable packaging solutions.

Position Description

This position forms part of the **FAroGels** research program on food-grade, bio-based, and biodegradable aerogels and their application in sustainable food systems. The selected candidate will be employed by Superex and will be required to enroll as a PhD student at Selçuk University**,** in accordance with the relevant admission and enrolment requirements.
The doctoral project will focus on:

- Food-grade aerogels can only move beyond the laboratory if they can be dried reproducibly. Supercritical CO_2 drying is the decisive production step, but laboratory dryers are still largely tuned by hand, which causes substantial batch-to-batch variability. DC4 tackles this bottleneck by designing and building a semi-automated supercritical CO_2 drying system with real-time monitoring of pressure, temperature, CO_2 density, and solvent saturation.
- The data logged during drying will be used to create process datasets linking drying trajectories to aerogel density, pore-size distribution and mechanical performance. On this basis, the project will develop and validate a machine-learning control module, trained first on commercial reference materials and then on aerogels produced elsewhere in the network, such as seaweed-residue aerogels and aerogels from non-gelling biopolymers. The AI-assisted system will recommend optimised temperature, pressure and depressurisation profiles, reducing trial-and-error and improving reproducibility and efficiency.
- The Doctoral Candidate will contribute to equipment design and instrumentation, run drying experiments, analyse process and structural data, and translate the results into standardised drying protocols for the network. Expected

outcomes are a functional semi-automated dryer with full sensor integration and data logging, parameter–property datasets, a trained control model, and drying SOPs used across FAroGels.
- DC4 is one of the enabling projects of the network: it supplies aerogels with controlled, documented structures and consistent materials for the food, packaging and modeling projects. Hosted by an industrial partner specialising in supercritical fluid technology, the position combines process engineering, data-driven modeling and industrial R&D experience, complemented by secondments to academic partners.
- The position will involve laboratory-based research, data analysis, scientific communication and close collaboration with other FAroGels Doctoral Candidates, supervisors and partner organizations.

Supervisory Team

The Doctoral Candidate will be supervised by a team combining academic and non-academic expertise:

Role	Name	Organisation	Country
Main supervisor	Said Adil Atlioglu Dr. Halit Cavusoglu	Pard Mühendislik ve Otomasyon Sanayi Ticaret Limited Sirketi (Superex) Selçuk University (SU)	Türkiye
Academic co-supervisor	Prof. Mecit Oztop Dr. Irina Smirnova	Middle East Technical University (METU) Technische Universitat Hamburg (TUHH)	Türkiye Germany
Industry supervisor	Main supervisor is non-academic.		

Planned Secondments

As part of the training programme, the Doctoral Candidate will complete planned secondments at FAroGels partner organisations:

Host organisation	Sector	Country	Duration
University of Santiago de Compostela (USC)	Academic	Spain	3 months
The Nottingham Trent University (TNTU)	Academic	United Kingdom	2 months
Technische Universitat Hamburg (TUHH)	Academic	Germany	1 month
aerogel-it GmbH	Non-academic	Germany	1 month

Main Responsibilities

The Doctoral Candidate will be expected to:
- Conduct research on Semiautomated supercritical CO_2 drying for reproducible structures.
- Plan, perform, document and analyse experimental work using relevant laboratory, analytical, processing and/or modeling methods.
- Collaborate with academic and non-academic partners across the FAroGels network, including during the planned secondments.
- Participate actively in FAroGels network meetings, training schools, workshops and transferable-skills activities.
- Prepare scientific reports, contributions to project deliverables, presentations and publications, and contribute to dissemination and communication activities.

Requirements

- **Educational Background**: Master's degree (or equivalent) in chemistry, materials science, food technology, physics, or nanotechnology and advanced materials.
- **Skills**: Strong laboratory and analytical skills in the design and construction of supercritical processing equipment.
- **Languages**: Proficiency in English (written and spoken) is required. A Turkish-language requirement applies at the PhD awarding institution; see "Institution-specific requirements" below.
- Strong motivation to pursue doctoral research in an international and interdisciplinary environment.
- Ability to work independently while contributing effectively to collaborative research activities.
- Good organization, communication and problem-solving skills.
- Willingness to travel for planned secondments, network meetings and training activities.
- Commitment to responsible research conduct, inclusion, collegiality and professional development.

MSCA Doctoral Network Eligibility Criteria

Applicants of any nationality are welcome to apply. At the date of recruitment, applicants must meet the following MSCA Doctoral Network requirements:
- **Doctoral candidate status:** Applicants must not already hold a doctoral degree. Applicants who have successfully defended their doctoral thesis but have not yet been formally awarded the doctoral degree are not eligible.

- **Mobility rule:** Applicants must not have resided or carried out their main activity (work, studies, etc.) in Türkiye for more than 12 months in the 36 months immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention or EU temporary protection are not taken into account. **Compliance is verified before the start of employment, on the basis of the candidate's passport and, where necessary, other documents.**
- **PhD enrolment:** Doctoral Candidates must be enrolled in a doctoral programme leading to the award of a doctoral degree in at least one EU Member State or Horizon Europe Associated Country. For this position, this is the doctoral programme at Selcuk University; applicants must therefore meet its admission requirements.
- **Institution-specific requirements:** the PhD is awarded by Selcuk University, so the selected candidate must also meet its admission conditions for international students. The required documents and the enrolment procedure are set out under "About the Host and PhD Awarding Institution" below. The condition to be aware of before applying is the Turkish-language requirement: an applicant who does not hold a Turkish proficiency certificate is registered in a preparatory class and begins the doctoral programme on submitting a C1 or C2 level certificate from a university TÖMER or another institution recognised by YÖK; applicants who completed their Bachelor's or Master's education in Türkiye may be exempted (https://selcuk.edu.tr/birim/sayfa/5323/uluslararasi-ogrenciler-9400).
- **Please note:** the FAroGels consortium is in contact with the University about how this requirement applies to an MSCA doctoral position. Should a different arrangement be agreed, the PhD for this position may instead be awarded by Middle East Technical University (METU), Ankara. Applicants are therefore recommended to also meet METU's doctoral admission requirements, so that their application remains valid in either case; these are set out in the DC5 and DC8 position announcements on the FAroGels website (https://farogels.eu/open-positions/).
- The doctoral school at Selcuk Unicersity takes 4 years, which requires continuation as PhD student for 1 year after finishing the employment contract.

→ **Visa and residence permit:** a visa or residence/work permit is not required at the application stage and is not a selection criterion. Where needed, it will be arranged after selection and before the start of employment, with the support of the recruiting organisation. Candidates from non-EU countries are equally welcome to apply.

What FAroGels Offers

- A full-time doctoral position funded through the **FAroGels** MSCA Doctoral Network.
- A fixed-term employment contract for 36 months at Superex.
- A competitive salary and employment conditions in accordance with the MSCA Doctoral Networks funding provisions, applicable national legislation and the policies of the Recruiting / Host Institution.
- Social-security coverage and other employment-related benefits in accordance with the applicable national and institutional framework.
- A Personal Career Development Plan (PCDP), prepared with the supervisory team and reviewed and updated during the project.
- Access to research facilities, infrastructure, training and support services at the Host Institution and within the FAroGels network.
- Participation in a structured doctoral training programme including scientific and technical training, transferable skills, career development and innovation-oriented activities.
- Planned secondments at FAroGels partner organizations, offering complementary scientific, technical and cross-sectoral experience.
- An international research environment and opportunities to build a professional network across academia and non-academic organizations.

Salary and Financial Package

This position is funded by the FAroGels MSCA Doctoral Network (HORIZON-MSCA-2025-DN-01-01, Grant Agreement No. 101312450). The salary is based on the following monthly MSCA allowances:

- **Living allowance:** EUR 4,010, adjusted **by the country correction coefficient** of the country of the recruiting organisation to ensure equal treatment and comparable purchasing power for all researchers.
- **Mobility allowance:** EUR 710, contributing to mobility-related costs such as relocation and travel.
- **Family allowance (if applicable):** EUR 660, paid for the months in which the Doctoral Candidate has a family during the project, including where family obligations arise after recruitment. 'Family' means persons linked to the researcher by marriage (or a relationship with equivalent status recognised by the legislation of the country where it was formalised) or dependent children actually being maintained by the researcher. The allowance is paid in accordance with the rules of the recruiting organisation, and supporting documents may be requested.

Monthly MSCA allowances for this position

Component	Calculation (per month)
Living allowance	EUR 4,010 × [country correction coefficient = 64.5%] (see guidance below)
Mobility allowance	Fixed amount = EUR 710.00

Component	Calculation (per month)
Total without family allowance	Living + mobility allowance
Total with family allowance	Living + mobility + EUR 660

Please note: *the amounts above represent the total employment cost, from which the employer's and the employee's compulsory social-security contributions and taxes are deducted in accordance with national law. Unless the recruiting organisation provides additional funding, the gross salary paid to the Doctoral Candidate is therefore lower than these amounts, and the net salary depends on personal circumstances.*

Country correction coefficients of the FAroGels beneficiaries

Country	CCC	Living allowance	+ mobility (EUR 710)	+ family (EUR 660)
Türkiye	64.5%	2,586.45	3,296.45	3,956.45
Poland	74.1%	2,971.41	3,681.41	4,341.41
Italy	95.3%	3,821.53	4,531.53	5,191.53
Spain	95.6%	3,833.56	4,543.56	5,203.56
Germany	101.2%	4,058.12	4,768.12	5,428.12
Finland	118.0%	4,731.80	5,441.80	6,101.80
United Kingdom	141.7%	5,682.17	6,392.17	7,052.17

Employment conditions: the Doctoral Candidate will be hired full-time (100%) by the recruiting organisation on a 36-month employment contract, with social-security coverage under national law that continues during secondments.

Funding Duration and PhD Completion

- This Doctoral Candidate position is funded by the FAroGels MSCA Doctoral Network for a maximum period of 36 months.
- The overall period required to complete a PhD degree may, depending on the regulations of the PhD awarding institution and applicable national requirements, extend beyond the 36-month FAroGels funding period.

Please note: *any employment, scholarship or other financial support beyond the 36-month FAroGels funding period is not covered or guaranteed by FAroGels. Any potential continuation of employment or funding would need to be considered separately between the relevant institution and the Doctoral Candidate, subject to institutional regulations and the availability of funds.*

About the Host and PhD Awarding Institution(s)/Organizations

Superex (Pard Mühendislik ve Otomasyon Sanayi Ticaret Ltd. Şti.) is a Konya-based company working on supercritical fluid processing technology and equipment, and is the employer for this position. The PhD is awarded by Selçuk University, also in Konya, through the Department of Physics of the Institute of Natural and Applied Sciences. The candidate must meet that Institute's admission and enrolment requirements, summarised below.

Item	Information
Doctoral programme / doctoral school	Institute of Natural and Applied Sciences (Fen Bilimleri Enstitüsü), Selçuk University, Konya, Türkiye
Relevant faculty / department	Department of Physics
PhD admission and enrolment requirements	Documents required from an international doctoral applicant: - https://selcuk.edu.tr/birim/icerik/5323/2026-2027-guz-yariyili-yabanci-uyruklu-basvuru-ilani-80475?culture=tr-TR&ui-culture=tr-TR - https://selcuk.edu.tr/birim/sayfa/5323/uluslararasi-ogrenciler-9400
Separate PhD application or enrolment procedure	Yes, separate from the FAroGels application. The pre-application documents are submitted in person to the department during the announced application period, the department forwards them to the Institute, and final registration is completed in person at the Institute. The dates are published by the Institute for each intake (https://selcuk.edu.tr/birim/fen_bilimleri_enstitusu/5323).
Recognition of foreign qualifications	A degree completed abroad requires a school recognition certificate ("okul tanınma belgesi") from YÖK (https://selcuk.edu.tr/birim/sayfa/5323/uluslararasi-ogrenciler-9400). An applicant who does not hold the certificate when applying submits it at final registration (https://denklik.yok.gov.tr/).

Item	Information
Additional requirements	The annual tuition fee for a doctoral programme is seven times the "current service cost" set by Presidential Decree, payable at the start of each semester, including during the scientific preparation and Turkish language education periods (https://selcuk.edu.tr/birim/icerik/5323/2026-2027-guz-yariyili-yabanci-uyruklu-basvuru-ilani-80475). After arrival, international students need a residence permit and General Health Insurance registration.

Application Documents

Applicants are strongly advised to read the position description and the eligibility criteria carefully before applying. Each application must include:

- A detailed curriculum vitae (education, research experience, technical skills and relevant achievements), including the dates and countries of residence, studies and employment for the last 36 months.
- A motivation letter explaining your interest in this position and your suitability for the project.
- Copies of Bachelor's and Master's diplomas and academic transcripts, or evidence that the Master's degree will be completed before the recruitment date. Notarised Turkish translations are required later, at PhD enrolment, not at this stage.
- Contact details of two referees and reference letters.
- Proof of English-language proficiency, if you hold a certificate. Selçuk University does not require an English-language examination.
- Incomplete applications may not be considered.

How to Apply

Application route: FAroGels online application form: please complete the application form at https://farogels.eu/apply/.

Indicative timeline

- **Application deadline:** 09 December 2026, 23:59 (CET)
- **Interviews:** January 2027
- **Evaluation:** February 2027
- **Selection outcome:** February 2027
- **Expected start of employment:** March 2027 (earliest)

Please note: *Applicants should ensure that all required documents are submitted before the stated deadline. A separate PhD admission and enrolment procedure applies at Superex.*

Selection Process

FAroGels follows an open, transparent and merit-based recruitment process in line with the European Charter for Researchers:

- **Eligibility check** by the FAroGels Project Manager.
- **Evaluation** of the eligible applications by an Interview Committee (primary supervisor, co-supervisor(s) and a representative of a non-academic partner) with a standardised scoring matrix; the three to five best-ranked candidates are shortlisted.
- **Online interview** with the shortlisted candidates.
- **Approval** of the selection by the FAroGels Supervisory Board, after which an offer is made.

All applicants are informed of the outcome and receive feedback on request.

Equal Opportunities and Data Protection

FAroGels and Superex are committed to equal opportunities, diversity and inclusion. Applications from all qualified candidates are welcome, irrespective of gender, gender identity or expression, sexual orientation, ethnic or social origin, nationality, disability, age, religion or belief.

Personal data submitted with applications will be processed by Superex exclusively for recruitment purposes and in accordance with the applicable data-protection legislation and institutional privacy policies.

Contact Information

- **For Scientific questions about the project:**

Mr. Said Adil Atlioglu, R&D Manager at Superex

Superex
Email: adil@superex.com.tr

- **For questions regarding the application process and/or PhD admission and enrolment, please contact:**

Dr. Halit Çavuşoğlu, Department of Physics
Selçuk University
Email: hcavusoglu@selcuk.edu.tr
Website: https://selcuk.edu.tr/birim/fen_bilimleri_enstitusu/5323?culture=tr-TR&ui-culture=tr-TR

- **General questions about FAroGels and the recruitment process:** FAroGels Project Management Team, Middle East Technical University (METU), Ankara, Türkiye – farogels@metu.edu.tr
- **General information on FAroGels:** https://farogels.eu/



This project is funded by the European Union's Horizon Europe programme under the Marie Skłodowska-Curie Actions Doctoral Networks, Grant Agreement No. 101312450.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.