DOCTORAL CANDIDATE POSITION

DC[14] – Aerogels for Oral Lubrication

Position	DC14 - Aerogels for Oral Lubrication
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	University of Helsinki, Department of Food and Nutrition, Helsinki, Finland
PhD awarding institution	University of Helsinki, Faculty of Agriculture and Forestry, Helsinki, Finland
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)

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 University of Helsinki and will be required to enroll as a PhD student at University of Helsinki, in accordance with the relevant admission and enrolment requirements.

- The doctoral project will focus on understanding how dietary-fibre aerogels/cryogels can be designed as functional porous and moisture-responsive materials for food applications, including the modulation of texture and mouthfeel. The key scientific challenge is to elucidate how fibre-network organisation, pore-network connectivity, swelling behaviour, pore size distribution, and network integrity govern moisture responsiveness, structural rearrangement, and mechanical response under food-processing and oral conditions.
- The research will combine material design with multiscale characterisation to establish structure-function relationships. Different approaches will be used to develop dietary-fibre aerogels/cryogels with tailored pore-network architecture and hydration properties. Particular attention will be given to how fibre characteristics and network organisation determine their response to moisture and mechanical stress. The doctoral researcher will gain experience with a range of advanced characterisation and experimental approaches, including Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), Confocal Laser Scanning Microscopy (CLSM), phase-enhanced synchrotron X-ray microtomography (XMT), Small-Angle X-ray Scattering (SAXS), Dynamic Vapour Sorption (DVS), and micropipette aspiration. The project will also involve advanced oral tribology using model interfaces such as PDMS-saliva and porcine tongue, in-contact fluorescence imaging, and sensory evaluation

in model and real food matrices. These complementary approaches will be used to establish links between material architecture, environmental responsiveness, and functionality in food systems.
- The PhD researcher will also be expected to develop experience beyond the core laboratory work through research visits and training with collaborating groups. These activities will provide experience in advanced characterisation, aerogelation, and the translation of fundamental findings into food applications.
- This Doctoral Candidate is expected to add an oral-processing dimension to FAroGels, providing next-generation materials that complement sensory control and align with the structural innovations.
- 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	Prof. Kirsi S. Mikkonen	Helsingin Yliopisto (University of Helsinki, UH)	Finland
Academic co-supervisor	Dr. Saman Sabet	Helsingin Yliopisto (University of Helsinki, UH)	Finland
Industry supervisor	Dr. Fabio Valoppi	Perfat Technologies Oy (PT)	Finland

Planned Secondments

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

Host organisation	Sector	Country	Duration
Technische Universitat Hamburg (TUHH)	Academic	Germany	2 months
King's College London (KCL)	Academic	United Kingdom	2 months
aerogel-it GmbH (AIt)	Non-academic	Germany	3 months

Main Responsibilities

The Doctoral Candidate will be expected to:
- Conduct research on material science and food technology.
- Plan, perform, document and analyse experimental work using relevant laboratory, analytical, processing and/or modelling methods.
- Participate actively in FAroGels network meetings, workshops, training schools, seminars and transferable-skills activities.
- Undertake planned secondments at FAroGels partner organisations, as specified for the DC project.
- Work collaboratively with academic and non-academic partners across the FAroGels network.
- Prepare scientific reports, project deliverables, presentations, publications and, where relevant, other dissemination or exploitation-related outputs.

Requirements

- **Educational Background**: Master's degree (or equivalent) in food technology, materials science, chemistry, biomaterials, or polymer science.
- **Skills**: Strong laboratory and analytical skills, with experience in experimental characterisation and quantitative analysis of soft, porous or hydrated materials. We are looking for a curious and proactive researcher with strong scientific thinking, a genuine enthusiasm for learning, and the confidence to explore unfamiliar methods and challenges. The ability and motivation to work across disciplines, learn independently, and pursue new ideas are highly valued.
- **Languages**: Proficiency in English (written and spoken) is required.
- 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 Finland 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 University of Helsinki, applicants must therefore meet its admission requirements.

→ **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 University of Helsinki.
- A competitive salary and employment conditions in accordance with the MSCA Doctoral Networks funding provisions, applicable national legislation and the policies of UH.
- 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 = 118.0%] (see guidance below)
Mobility allowance	Fixed amount = EUR 710.00
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

Country	CCC	Living allowance	+ mobility (EUR 710)	+ family (EUR 660)
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

- The University of Helsinki is one of the best multidisciplinary research universities in the world. In addition to its 11 faculties, the University of Helsinki includes several independent institutes, some of which are jointly operated with other universities. The University of Helsinki is an international academic community of 40,000 students and staff members. It operates on four campuses in Helsinki and at 15 other locations.
- The Faculty of Agriculture and Forestry is located on the Viikki campus, ten kilometres from the Helsinki city centre. The mission of the faculty is to promote the sustainable use of renewable natural resources through scientific research and research-based teaching. We focus on agricultural and forest sciences, food and nutrition, microbiology, as well as on economics and management. We cover the full natural resource chain from farm to fork, the entire field of forest sciences from soil chemistry to marketing, as well as the environmental effects of related activities. Graduates from the Faculty of Agriculture and Forestry are versatile experts in biosciences and business, able to meet the needs of both the business sector and society at large.
- To explore even more: www.helsinki.fi/en/faculty-of-agriculture-and-forestry

The successful candidate must fulfil the admission and enrolment requirements of University of Helsinki.

Item	Information
Doctoral programme / doctoral school	Doctoral Programme in Multidisciplinary Research in Renewable Natural Resources
Relevant faculty / department	Faculty of Agriculture and Forestry/Department of Food and Nutrition
PhD admission and enrolment requirements	How to apply to doctoral programmes | University of Helsinki
Official PhD admission / enrolment webpage	How to apply to doctoral programmes | University of Helsinki
Separate PhD application or enrolment procedure	Yes: How to apply to doctoral programmes | University of Helsinki
Recognition of foreign qualifications	How to apply to doctoral programmes | University of Helsinki
Additional requirements	Language certificate and Residence permit

Application Documents

Please submit the following documents:

- A detailed curriculum vitae, including education, research experience, technical skills and relevant achievements.
- A motivation letter explaining your interest in this specific DC position, your relevant background and your suitability for the project.

- Copies of Bachelor's and Master's diplomas and academic transcripts, or evidence that the relevant degree will be completed before the recruitment date.
- Contact details for two referees and reference letters, according to the requirements of University of Helsinki.
- Proof of English-language proficiency, where required by the University of Helsinki.
- In addition to the required application documents, applicants should provide concise written responses to the four questions below. These responses are intended to assess the applicant's scientific understanding, analytical thinking, and potential to work in a multidisciplinary doctoral research project. Relevant references/citations are required. References are not included in the word limit.
    1. **Aerogels and cryogels:** Explain the main differences between aerogels and cryogels, including how their formation processes influence their structure and properties, and why these differences may be relevant to food applications. *(Maximum 200 words)*
    2. **Characterisation of porous and soft materials:** Describe approaches that can be used to characterise the structure, porosity, hydration/moisture response, and mechanical properties of porous or hydrated soft materials. Explain briefly what information the selected approaches provide. *(Maximum 300 words)*
    3. **Critical thinking and problem solving:** Describe how you would approach an unexpected, contradictory, or unsuccessful experimental result during your doctoral research. Where possible, provide an example from your previous experience. *(Maximum 300 words)*
    4. **Experimental design and scientific reasoning:** Consider two fibre-based aerogels with similar composition but different pore network structures, where one produces a smoother mouthfeel than the other. How would you design experiments to investigate the mechanisms responsible for this difference? *(Maximum 200 words)*

    → **Applications that do not include all four responses, or that do not follow the specified requirements, will not be considered.**
- Incomplete applications will not be considered.

How to Apply

Applications for this position must be submitted through **both** of the following channels:

1. **Direct application to the recruiting organisation:** To apply, please submit your application: The link can be found under Open positions | University of Helsinki by searching **"Doctoral researcher in Food Materials Science or Aerogels for Oral Lubrication."** : https://jobs.helsinki.fi/job/Helsinki-Doctoral-researcher-in-Food-Materials-Science%2C-MSCA-Doctoral-Network/1374476257/
2. **FAroGels online application form** – in addition, please complete the application form at https://farogels.eu/apply/ and upload the same documents there.

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)

Note: *Applicants should ensure that all required documents are submitted before the stated deadline. Please note that a separate PhD admission and/or enrolment procedure may apply at UH.*

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 University of Helsinki 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 University of Helsinki exclusively for recruitment purposes and in accordance with the applicable data-protection legislation and institutional privacy policies.

Contact Information

- **For scientific questions regarding the DC project, please contact:**

Saman Sabet, Dr, Supervisor: Please contact him **only if you have specific scientific questions about the position**. Please refrain from sending CVs, expressions of interest, or questions regarding eligibility or the application process to him.

Department of Food and Nutrition
University of Helsinki
saman.sabet@helsinki.fi

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

HelsinkiUni Help Contact details: **https://uni-help.helsinki.fi/en**

- **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/

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