



2 Positions for Early-Stage-Researchers H2020-MSCA-ITN “Breaking Bad Biofilms. Innovative Analysis and Design Rules for Next-Generation Antifouling Interfaces”

ORGANISATION/COMPANY: Universität Ulm

RESEARCH FIELD: Analytical Chemistry, Electrochemistry, Spectroscopy, Nanoscience, Surface chemistry

RESEARCHER PROFILE: First Stage Researchers (R1)

APPLICATION DEADLINE: 31/05/2019

TYPE OF CONTRACT: Temporary

JOB STATUS: Full-time

HOURS PER WEEK: 40

EU RESEARCH FRAMEWORK PROGRAMME: H2020 / Marie Skłodowska-Curie Actions

MARIE CURIE GRANT AGREEMENT NUMBER: 813439

The BREAK BIOFILMS Training Network “Breaking Bad Biofilms: Innovative Analysis and Design Rules for Next-Generation Antifouling Interfaces” is a consortium of world leaders in sensing, cell imaging, interfacial engineering, microbiology and nanoformulation from 6 universities, 8 companies, a consortium of food industries, a research centre, and a business and innovation centre. BREAK BIOFILMS announces 15 positions for Early Stage Researchers (ESRs), who will have access to state-of-the-art equipment and will obtain a unique technical, industrial, and entrepreneurial training.

BREAK BIOFILMS description:

Biofilms, i.e. communities of microorganisms that attach and grow on a solid surface, cause about 80% of infections in humans, and disinfectants rarely succeed in destroying them. They cost European economy billions of euros annually. The

BREAK BIOFILMS Training Network aims to solve this issue by training the next generation leaders. They will understand the (bio)physicochemical mechanisms of biofilm formation, be able to produce technology for detecting and identifying biofilm formation with extreme sensitivity, and develop next generation biocides for preventing and destroying biofilms in industrial and biomedical areas. This integrated strategy from biofilm detection to destruction that builds on key innovations from the partner labs, is globally distinctive and promises significant progress. The graduates will be ideally placed to enter and support existing European industry across a number of different sectors (biomedical, food, antimicrobials). Additionally, they will also be capable of creating new businesses thanks to a combination of in depth training in entrepreneurship and direct experience of establishing and running a virtual company as part of the training network. Beyond the trained researchers, this project will produce technologies that will enhance the productivity of European industries, create intellectual property with a strong probability of commercialization and improve the health and well-being of European citizens by minimizing infection rates and the inappropriate use of ineffective biocides that is leading to resistance.

More information on this Project can be found here:
<https://cordis.europa.eu/project/rcn/218447/factsheet/en>

The positions are for 36 months and expected to begin within the last quarter of 2019. All positions will remain open until suitable candidates have been identified. Applicants may register their interest for more than one position and agree to have their details shared within the BREAK BIOFILMS Network. Each project will also include a secondment to a collaborating industrial company and one of the partner universities.

Research Projects at Universität Ulm:

ESR1 project

Title: Development of functionalized atomic force-scanning electrochemical probes for studying biofilm formation

Overview: The aim of this project is using advanced hybrid analytical methods such as combined scanning probe techniques to study bacterial cell adhesion. Single cell force spectroscopy using novel colloidal AFM-SECM probes with potentiometric AFM-SECM probes for localized pH measurements will be further developed and applied to biofilm studies. Nanoparticles release kinetics and on surface morphology changes in biofilms will be characterized. Stimulation experiments to locally change the microenvironment of the biofilm or bacterial aggregates or by

releasing silver ions AFM tip-integrated electrode will be implemented. Changes induced may then be monitored using a multifunctional platform via IR-ATR.

Main Supervisor(s): Christine Kranz (Christine.kranz@uni-ulm.de) and Boris Mizaikoff (boris.mizaikoff@uni-ulm.de)

Start date: 01/09/ 2019

ESR2 project

Title: Analytical platforms for studying the chemical and physical properties of biofilms

Overview: The main objective of this project is the development of advanced mid-infrared spectroscopic techniques for studying biofilm formation in combination with orthogonal sensing concepts such as AFM, luminescence, and electrochemical analysis techniques. Next to investigating biofilm formation, antimicrobial films and their release characteristics will be studied, and complemented by multivariate data evaluation strategies and data classification algorithms enabling advancing multi-parametric data mining.

Main Supervisor(s): Boris Mizaikoff (boris.mizaikoff@uni-ulm.de) and Christine Kranz (Christine.kranz@uni-ulm.de)

Start date: 01/09/ 2019

Benefits

The successful candidates will be employed on a full-time basis with a competitive salary in accordance with the Marie Skłodowska-Curie Actions (MSCA) rules and the personal circumstances of the applicant. The successful candidates will receive a financial package consisting of MSCA living allowance and mobility allowance. Eligible applicants with a family will also receive an additional family allowance according to the rules of the MSCA. The exact (net) salary will be confirmed upon appointment and will depend on the Host Institution's local tax regulations and on the country coefficient of your Host institution country.

Requirements

Applicants must fulfill the usual MSCA eligibility and mobility rules.

-Applicants must at the date of recruitment **be in the first 4 years** (full-time equivalent research experience) **of their research careers** and have not been awarded a doctoral degree.

-The researcher must not have resided or carried out his/her main activity (work, studies, etc.) in the country of his/her host organisation from more than **12 months in the 3 years** immediately prior to his/her recruitment (short stays, such as holidays, not taken into account).

Selection process

General information for applicants: **ESR positions will also be advertised locally.**

The candidates need to contact the main supervisor(s) of their positions as for specific/local acceptance requirements (e.g. English requirements, minimum grade...). **To apply**, please send your CV, a cover letter and any other supporting documents by e-mail to the main supervisor(s) of your positions (use as subject "BREAK BIOFILMS Application", and mention the ESR number(s) you are applying to).

Applications will be welcomed from candidates of any nationality with a proven track record in one of the fields related to the project demonstrated through a Master's degree certificate and appropriate experience. Candidates should also be able to demonstrate extra-academic experience and evidence of creativity and leadership. The Supervisory Board (SB) will grade the candidates on a scale regarding:

1. Academic excellence (0-30 points)
2. Professional experience (0-10 points)
3. Linguistic proficiency in English and /or the languages of his/her Host Institution (0-10 points)
4. Publications and other scientific activities (0-20 points)
5. Letters of reference (0-10 points).

SB will shortlist candidates, to be interviewed in person or via video conference by the recruiting beneficiary supervisors, who will take the final decision according to the rules of the hosting institution. The successful ESRs will then begin their 36 month contracts. The candidates will automatically be informed at each stage of the evaluation process.

Additional comments

Data collected from the candidates will be used for recruitment purposes only and will not be shared outside BREAK BIOFILMS unless authorised by the applicant. The data will be kept for a period of five years after the end of the project for EU auditing purposes.