



PhD in Supramolecular Chemistry / Physical Chemistry

Where to apply

Application Deadline: 01/01/2018 13:00 - Europe/Brussels

Contact Details

Where to send your application.

COMPANY

University of Strasbourg

E-MAIL

hermans@unistra.fr

Hiring/Funding Organisation/Institute

ORGANISATION/COMPANY

University of Strasbourg

COUNTRY

France

ORGANISATION TYPE

Higher Education Institute

CITY

Strasbourg

WEBSITE

<http://www.hermanslab.com>

<http://isis.unistra.fr>

POSTAL CODE

67000

E-MAIL

hermans@unistra.fr

STREET

8 allée Gaspard Monge

ORGANISATION/COMPANY

University of Strasbourg

LOCATION

France › Strasbourg

RESEARCH FIELD

Chemistry › Molecular chemistry

TYPE OF CONTRACT

Temporary

Chemistry › Organic chemistry

Chemistry › Physical chemistry

RESEARCHER PROFILE

First Stage Researcher (R1)

APPLICATION DEADLINE

01/01/2018 13:00 - Europe/Brussels

JOB STATUS

Full-time

HOURS PER WEEK

40

OFFER STARTING DATE

01/01/2018

EU RESEARCH FRAMEWORK PROGRAMME

H2020 / ERC

REFERENCE NUMBER

757910

2 PhD positions are available starting from 01/01/2018 funded by ERC Starting Grant 2017 "Life-Cycle"

The "Life-Cycle" ERC project aims to develop a new class of artificial supramolecular materials that are kept in sustained non-equilibrium states by continuous dissipation of chemical fuels. Supramolecular polymers in current artificial materials stick together through weak reversible bonds that can be exchange by thermal energy. In contrast, natural supramolecular polymers such as those in the cytoskeletal network use chemical fuels such as adenosine triphosphate (ATP) to achieve an incredible adaptivity, motility, growth, and response to external inputs. Development of chemically fueled artificial supramolecular polymers should therefore lead to more life-like materials that could perform functions so far reserved only for living beings.

The materials you will work on are based on supramolecular reaction cycles that have both positive and negative feedback in order to achieve emergent properties, such as oscillations and waves. Two different approaches are used: i) supramolecular polymers that are fueled by redox reactions, and ii) enzyme-switchable supramolecular polymers that consume one of the natural fuels, namely ATP. Using other co-assembling species we can engineer negative feedback in our reaction cycles to obtain unique supramolecular dynamics. Since the building blocks react, but also self-assemble they have built-in chemomechanical properties, much like in living materials such as the cytoskeleton.

First we study the temporal behavior (part A) of our reaction cycles in well-stirred environments. Next, we move to non-stirred conditions (part B), where spatiotemporal behavior can be studied. And lastly, we develop free-standing non-equilibrium interactive materials based on our reaction cycles (part C). Overall, our approach opens a new way to obtain more life-like artificial materials that can eventually perform complex (biological) functions.

ADDITIONAL INFORMATION

Benefits

Full-time PhD position (1340 EUR / month netto, i.e., after social taxes), including health care, and pension.

Access to university facilities, free language courses, sport center, etc.

Selection process

Please provide at least 1 letter of recommendation

Personal motivation (why are you interested in this position?)

Additional comments

Check our website (<http://www.hermanslab.com/>), section "Contact" for tips on how to apply.

REQUIREMENTS

Required Research Experiences

RESEARCH FIELD

Chemistry

YEARS OF RESEARCH EXPERIENCE

1 - 4

Offer Requirements

REQUIRED EDUCATION LEVEL

Chemistry: Master Degree or equivalent

REQUIRED LANGUAGES

ENGLISH: Excellent

Skills/Qualifications

Being motivated and good work ethic is the most important!

Skills in organic synthesis preferred, but not required

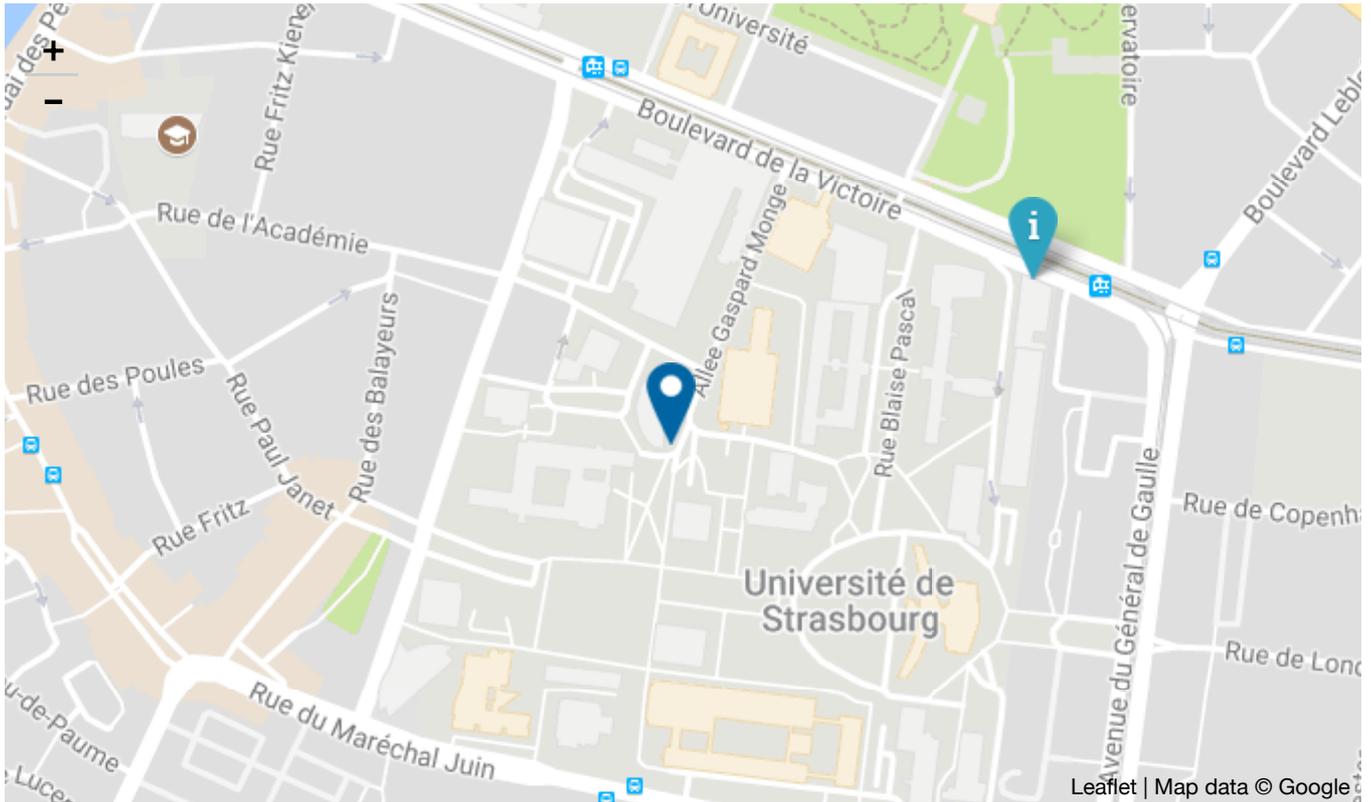
Knowledge of basic spectroscopy (UV, FL, CD, NMR, etc.)

Experience with (kinetic) modeling is a plus

Specific Requirements

The work is based on our recent ChemComm 2016 and Nature Communications 2017. If you can suggest your own ideas of what you would do next, this would show real motivation and creative thinking (i.e., big plus in your application)

Map Information



 Job Work Location  Personal Assistance locations

WORK LOCATION(S)

2 position(s) available at
University of Strasbourg
France
Strasbourg
67000
8 allée Gaspard Monge

EURAXESS offer ID: 255076