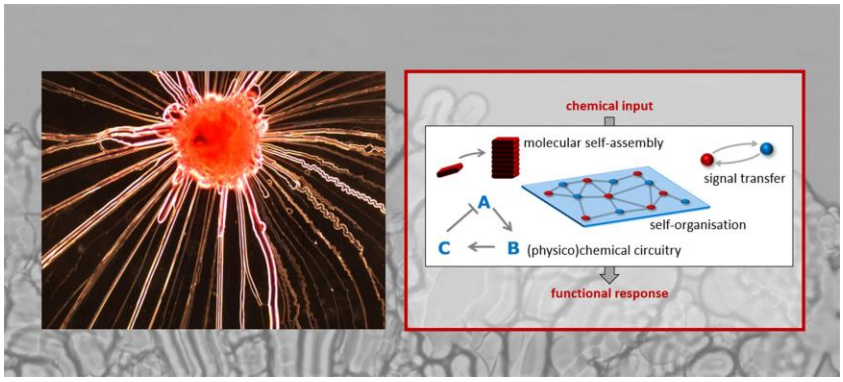
Research Center for
Functional Molecular Systems
Gravitation Program - The Netherlands

Institute for
Molecules and Materials
Radboud University

Molecular self-assembly of life-like materials at mesoscopic scale.

Project description – Living matter has unique properties that are a great source of inspiration to create new materials with unprecedented "life-like" characteristics. In our group, we build adaptive materials based on molecular assemblies that organize at much larger length scales, while processing information from changing environments in order to respond appropriately.

In this PhD-project, you will work on a self-assembly system that we started to explore in our lab, based on amphiphilic molecules that form cm-long wires and spread out over 2D water-air interfaces. By combining this assembly process with physicochemical phenomena (surface tension, reaction-diffusion, osmosis, feedback), polymer chemistry and hydrogels, you will explore how the growth of these wires can be directed. Thereafter, we aim to employ this self-assembly process to create an autonomous system that transfers chemical signals via growing wires that form and re-wire connections over 2D substrates – ultimately leading into new possibilities in e.g. sensing or diagnostics.



Requirements – MSc degree in Chemistry, Chemical Engineering or a related discipline. Our research combines experiments and simulations, and varies from molecular self-assembly to microfluidics, dedicated microscopy techniques and building dynamic models in programs like Matlab. Affinity with physical chemistry is a strong pro. Strong motivation and interest to work in an interdisciplinary research center and a highly collaborative environment. Independent mind, good communication skills and team spirit. Excellent skills in written and spoken English.

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Work environment – As a PhD Candidate, you will be part of the Physical-Organic Chemistry group at Radboud University (Nijmegen, The Netherlands) and working with dr. Peter Korevaar (www.ru.nl/lifelikematerials). Our research group is part of the Institute for Molecules and Materials (IMM). IMM is an interdisciplinary research institute in chemistry and physics at the Radboud University. Our mission is to perform fundamental research to understand, design and control the functioning of molecules and materials.

Funding – Our research is part of the research center for Functional Molecular Systems (www.fmsresearch.nl)

More information – Visit the Radboud University website for PhD's or send an email to dr. Peter Korevaar (p.korevaar@science.ru.nl)

How to apply – You should upload your application (attn. of Ms Wendelien van der Pluijm) exclusively using the button 'Apply' on this page. Your application should include (and be limited to) the following attachment(s): Motivation letter (indicating the project number) and CV including the names and contact details of at least two academic references.

Application deadline is 20 January 2019.