PhD position: Organocatalysis as a tool to control soft material processes

Faculty/department Applied Sciences, Department of Chemical Engineering
Level MSc degree
Maximum employment 38 hours per week (1 FTE)
Duration of contract 4 years
Salary and conditions will be in accordance with the Collective Labor Agreement (CAO) of the Dutch Universities.

Job description

We seek a talented and ambitious PhD researcher for a challenging research project on the border between synthetic organic chemistry, polymer chemistry, catalysis and responsive materials. The project aims at use of responsive organocatalysts as a way to introduce signal response in organic materials. The PhD position is concerned with the design and synthesis of new responsive catalysts and catalysis-responsive groups, their incorporation in molecular and polymer materials, as well as characterizing the signal response of these new materials.

The position is part of a collaborative project between the group of Dr. Rienk Eelkema at TU Delft and the group of prof. Sanzhong Luo at the Chinese Academy of Sciences. Most of the work will be performed in the Advanced Soft Matter section at the Department of Chemical Engineering of Delft University of Technology. Secondments (up to 6 months) at the lab of the Chinese partner are an essential part of the project. At TU Delft, the PhD student will be part of a larger team of up to 10 PhDs and postdocs working on related topics.

Requirements

The successful candidate will have a strong background in synthetic organic chemistry and/or polymer chemistry. You must have practical skills in multi-step organic synthesis, the ability to analyze and optimize reaction processes, and the ability to select and execute appropriate purification techniques for isolating compounds on a 50 mg to 50 g scale. Experience in polymer synthesis and characterization is highly advantageous. Desirable experience includes (a) NMR, HPLC, GPC, MS (b) UV-VIS, fluorescence spectroscopy and microscopy (light, confocal, AFM, SEM, TEM) (c) kinetics (d) rheology. It is essential that you are able to demonstrate competence in these areas, as judged by publications (or papers in press) in high quality peer reviewed journals or an MSc Thesis on a relevant topic. Very good spoken and written English is mandatory.

Group, Department, Faculty

The Advanced Soft Matter (ASM) research group is focused on the development and characterisation of new, functional, soft molecular and polymer materials, as well as the design and synthesis of new functional molecules and polymers. Examples include dynamic gels and surfactants, self-healing materials and out-of-equilibrium systems, often formed by self-assembly or directed self-assembly of

molecular building blocks. Materials of interest may range from bio-organic to opto-electronic, nanostructured materials.

The Department of Chemical Engineering promotes the pursuit and dissemination of knowledge in chemistry and chemical engineering, with a focus on materials for energy and health applications. We aspire to improve the quality of life in a sustainable society through discovery and innovation, the quality of life of our graduates through inspiration and teaching, and the quality of life of our peers through collaboration and exchange. With a proud heritage in chemical engineering, the department seeks to break new ground in areas where molecular understanding and engineering design meet.

The Faculty of Applied Sciences is the largest faculty of TU Delft, with around 550 scientists, a support staff of 250 and 1,800 students. The faculty conducts fundamental, application-oriented research and offers scientific education at the bachelor, master and doctoral levels. The faculty is active in the fields of Life and Health Science & Technology, Nanoscience, Chemical Engineering, Radiation Science & Technology, and Applied Physics.

Conditions of employment

TU Delft offers an attractive benefits package, including a flexible work week, free high-speed Internet access from home (with a contract of two years or longer), and the option of assembling a customized compensation and benefits package. Salary and benefits are in accordance with the Collective Labor Agreement for Dutch Universities.

Information and application

For more information about this position, please contact Dr. Rienk Eelkema, phone: +31 (0)15-2781035, e-mail: r.eelkema@tudelft.nl. To apply, please e-mail a CV, reference letters or names of references, and a letter of application to Ms. Veby Agus, V.A.Agus@tudelft.nl. Please mention the title of the project in the subject of the e-mail.

Deadline: April 1, 2018