

Faculty of Science and Engineering

Profile report: Tenure Track assistant professor in functional molecular materials and surfaces (Functionele Moleculaire Materialen en Oppervlakken)

- Discipline: *Organic chemistry, functional materials*
- Level: tenure-track Assistant professor
- Fte: Full time (1.0)

1. Scientific discipline

The assistant professor position in functional molecular materials and surfaces is positioned in the area of organic chemistry. The design, synthesis and study of properties of organic materials is a core activity of the discipline chemistry. Functional and responsive materials and surfaces, based on molecular and supramolecular approaches, are among the frontiers of chemistry and are of major future scientific and industrial importance. The new position will strengthen the position of the Stratingh Institute for Chemistry as an international leading institute for research and education in this field.

2. Vacancy

This position is opened by the Board of the Faculty (ref. JK/gl/17/01066) and will be embedded in the Stratingh Institute for Chemistry. The position falls within the framework of 'Career Paths in Science 4' ('Bèta's in Banen 4'). Please see link for [criteria and conditions](#).

3. Selection committee (BAC)

Prof. Dr. A.J. Minnaard, director of the Stratingh Institute, CBBC-fellow, Chair

Prof. Dr. B.L. Feringa, Stratingh Institute/chair executive board ARC-CBBC

Prof. Dr. N. Katsonis, Stratingh Institute, CBBC-fellow

Prof. Dr. W.R. Browne, Stratingh Institute, CBBC-fellow, director of the Master Chemistry

Prof. Dr. S. Otto, Stratingh Institute, CBBC-Fellow

Prof. Dr. D. Wilson, Radboud University, CBBC-fellow

Johanna Thomann, Master Chemistry

Added: N. Clemencia, Human Resources, as advisor.

4. Research area

The research area covers synthetic chemistry, physical organic chemistry, supramolecular chemistry, and organic materials in particular functional and responsive materials and surfaces. The new position is affiliated with the RUG hub of the national ARC CBBC and will focus on materials and surfaces, more specifically on functional organic materials with responsive and adaptive behavior towards future applications (e.g. functional coatings, sensing, self-healing/cleaning). The new position will be complementary to the present synthesis and materials groups taking advantage of the unique position that groups within the Stratingh Institute for Chemistry have gained internationally. It provides also a direct way to strengthen academic – industrial cooperation via ARC-CBBC aiming at functional and

smart materials with the multinationals Shell, AKZO-NOBEL and BASF. As part of the national gravitation program Functional Molecular Systems (FMS, fmsresearch.nl) and of the Zernike+ program on Advanced Materials, the new activities will position Groningen as a highly visible international expert center in functional materials and surfaces.

5. Embedding

The Stratingh Institute for Chemistry focuses on research in molecular and supramolecular chemistry, with overarching impact on biology, chemical engineering, and physics based on fundamental organic and inorganic chemistry. It covers three research areas:

- Chemistry of Life: this area concentrates on a molecular approach to the study of biological phenomena and medically relevant problems, including the synthesis of complex natural products, the design and synthesis of small molecules to study and steer biochemical and cellular processes, and emerging properties like self-organisation and catalysis, including life itself.
- Chemical Conversion: this area investigates new synthesis and catalysis methods, including asymmetric catalysis and oxidation catalysis, designing artificial enzymes for new-to-nature reactions, the use of bio-based feedstocks and development of sustainable processes, and homogeneous catalysis methods using earth-abundant metals.
- Chemistry of Materials: this area covers various topics in nanoscience with a focus on advanced functional materials, such as molecular switches and motors, photovoltaics, functional polymers, molecular electronics, supramolecular materials, functional surfaces and artificial membrane components.

6. Local and (inter)national position

The position will be embedded in the Stratingh Institute for Chemistry and will be affiliated with the national Advanced Research Center Chemical Building Blocks Consortium ARC-CBBC (arc-cbbc.nl). The new independent group will closely cooperate with other groups in the Stratingh Institute, and potentially groups in the Zernike Institute of Advanced Materials, in order to establish a major expertise center for responsive organic materials and functional coatings at the University of Groningen.

The Stratingh Institute for Chemistry has built over the years an extensive collaboration network nationally and worldwide. Research groups within the Stratingh Institute take part in national research consortia, e.g., the Gravitation Program Functional Molecular Systems (FMS), ARC-CBBC – Advanced Research Center Chemical Building Blocks Consortium, the Origins Center and in local research networks such as the CoFund program ALERT and the FOM-FOCUS group Organo Photovoltaics. The Stratingh Institute has a long tradition of cooperative projects with industry (DSM, Unilever, AKZO-NOBEL, Shell, Solvay) and participates in many international projects (e.g. Harvard Univ., Univ. of Leuven, ECUST Shanghai, Nagoya Univ., EMPA Zurich, Univ. Bologna, Univ. Colorado, UCLA, Univ. Tokyo).

The Stratingh Institute has an excellent (inter-)national position in organic chemistry. Members of the Stratingh Institute were among the founding fathers of ARC-CBBC and recognized among the three hubs (Utrecht, heterogeneous catalysis; Eindhoven, chemical

engineering; Groningen, synthesis, homogeneous catalysis, materials). Other important activities in the field of organic materials are partly organized in FMS, and furthermore at Delft Technical University (Prof. Van Esch, Prof. Eelkema) and the University of Twente (Prof. Jonkheijm).

7. Expected contributions to research

The candidate is expected to build her/his own independent research group in the field of functional molecular materials and surfaces through the design, synthesis, and characterization of molecular based systems, and establish a strong and internationally recognized center of expertise in this field. Cooperative research programs will be established within the Stratingh Institute and potentially other institutes at the University of Groningen, with ARC-CBBC partners and with industry. In addition, through combining current expertise in synthesis, physical organic chemistry and supramolecular chemistry with new research lines in responsive and adaptive functional materials and surfaces, the candidate will create a strong position in molecular materials in the institute. Obtaining substantial extramural funding is key to attaining the above objectives.

8. Expected contributions to teaching

The candidate will teach in the BSc Chemistry & Chemical Engineering, in the Master Chemistry and in the Topmaster Nanoscience. Supervision of bachelor and master students in their research projects is also part of the teaching contribution.

9. Expected contributions to the organization

The candidate is expected to have an active interest and to provide a positive contribution to the management and organizational tasks of the institute. At the level of the FSE, the candidate will contribute to the organization of the faculty, for example by participating in working groups and committees, in the fields of teaching, research and management. The candidate will participate in relevant national and international organizations.