Match of the vacancy within the Strategic Goals of the Department

Global Strategic Goals of the Faculty of Engineering and Architecture at Ghent University

New members of the Professorial Staff (i.e. Assistant Professors, Associate Professors, Full Professors and Senior Full Professors) are expected to develop (research) activities aimed at engineering applications or architecture and to join, as far as is possible, existing research groups rather than to separately create (very) small new and isolated research groups.

The research activities within the Faculty of Engineering and Architecture are only partially realized by employees that are funded directly by the government (Professorial Staff, Assisting Academic Personnel, and Administrative & Technical Personnel) or through research funds provided by the university itself. Indeed, a considerable share of research activities within the Faculty of Engineering and Architecture is realized by researchers that are funded through external national/Flemish or international resources (e.g., FWO-Flanders/Research Foundation-Flanders, VLAIO-Flanders/Flanders Innovation & Entrepreneurship, EU, contract research in cooperation with companies). While the latter concerns external funding, the research activities are in fact managed by internal Professorial Staff members that succeed in acquiring external funding based on their expertise and experience.

If the Faculty of Engineering and Architecture wants to safeguard its competitive position (internationally and nationally), it will continuously have to succeed in acquiring the necessary external funding. It is therefore the Faculty's strategy to preferably create vacancies in domains in which chances are high that such external funding can be acquired. This aspect is explicitly considered during the appointment procedure of Professorial Staff members within the Faculty of Engineering and Architecture.

Strategic Goals of the Department - match with the vacancy

The Centre for Textile Science and Technology (CTSE) is part of the Department of Materials, Textiles and Chemical Engineering (MaTCh - EA11), within the Faculty of Engineering and Architecture at Ghent University in Belgium. It aims at high-level education, research and services toward industry and society in the general field of materials science and material manufacturing, and the specific field of textile science/engineering and technology. CTSE is therefore composed of a well-balanced team of professors, assistant academic staff members and technical staff members.

The ultimate goal is to cover the whole production chain to further optimize and design novel textile-based applications, explaining research themes such as polymer and textile processing (e.g. (reactive) extrusion, textile manufacturing), fiber material design and characterization (e.g. nanofiber production & physical and chemical fiber modification), textile technology (e.g. microstructural evaluation, mechanical modelling and textile/composite manufacturing), and advanced applications (e.g. (nano)filtration and smart textiles).

CTSE is unique within the Benelux with European research units covering similar research activities being for instance: Delft University of Technology (the Netherlands; B. Caglar), University of Twente (the Netherlands; T. ten Elshof), EPFL (Switzerland; V. Michaud), Sorbonne University (France; C. Sanchez and C. Laberty-Robert), University of Montpellier (France, S. Cavaliere), RWTH Aachen (Germany, L. De Laporte and A. Pich), University of Padua (Italy, M. Roso and E. Benetti), Sapienza University of Rome (Italy, I. Fratoddi), UCL (Great-Britain, G. Williams) and Leeds University (Great-Britain; C. Carr and G. Tronci). CTSE also collaborates with universities outside Europe. Examples are: Stanford University (USA; R. Dauskardt), Sichuan University (China; H. Xia), and Kyoto Institute of Technology (Satoko Okubayashi). CTSE is also a founding member of the Association of Universities for Textiles (AUTEX).

Synergies between the diverse competences of CTSE members are essential to allow for:

i. the development of novel functional materials for textile applications, ranging from functional membranes and chemical sensors to smart textiles
ii. a multi-scale combined experimental and theoretical understanding of the chemical and microstructural nature of fibers as well as chemical and physical textile technological processes
iii. fundamental insights in polymer processing techniques, including fiber production, such as melt extrusion, wet spinning and nanofiber electrospinning
iv. the advanced understanding and characterization of physical properties of fibers, fiber-fiber and matrix-fiber interactions in view of technical textiles and composite applications
v. a facile incorporation of fiber/textile product development in an industrial context, including sustainable fiber production and textile applications with a sustainability angle

The new professor in the rank of Assistant Professor (tenure track) is expected to further strengthen CTSE and to contribute to the aforementioned synergies to ensure a leading role of the center. Specific support is expected regarding research on the field of high-tech fiber materials and their sustainable applications, with a strong focus on experimental fiber production (mainly electrospinning and wet spinning) characterization and design (e.g. flow behaviour, SEM and microscopic analysis, humidity/sorption, tensile testing, IR, and (m)DSC). The material design should be applied to improve the production of conventional textile materials as well as advanced fiber-based applications such as final devices (e.g. membranes). The experimental characterization on the fiber level should be combined with chemical kinetic insights in material performance, and aim at increased sustainability for the textile application studied and developed. The candidate should demonstrate his/her willingness and experience to contribute to the education provided by CTSE and the Department at the Bachelor and/or the Master level; specifically lecturing a first Bachelor course in Dutch on materials science principles is expected. Furthermore, an active interaction with staff members associated with services is required.

To ensure such a program, the Department opens a position (100%) in the Centre for Textile Science and Technology (CTSE) in the rank of Assistant Professor (tenure track) in the field of high-tech fiber materials and their sustainable applications. The candidate selected for this position must be an expert in the fields cited below. The opened mandate fits in the cited Institute for Scientific Information (ISI) fields and meets the objectives of the research policy of the European Union and important international journals.

- Related ISI fields:
  - Materials science: textiles
  - Materials science: multidisciplinary
  - Materials science: characterization and testing
  - Polymer Science
  - Nanoscience nanotechnology
- Related EU-research fields:
  - Key Enabling Technologies: nanotechnologies, advanced materials, advanced manufacturing and processing (production technologies)
  - Environment & Climate Action
  - Raw Materials
  - Innovative textiles
- Related international journals:
  - ACS Applied Materials & Interfaces
  - Advanced Fiber Materials
  - Advanced Functional Materials
  - Autex Research Journal
  - Materials Today Chemistry
  - Materials & Design
  - Polymer Testing
  - Sustainable Materials and Technologies
  - Textile Research Journal