

Eindhoven University of Technology (TU/e) has the following vacancy

PhD in Computational Quantification of Mechanical Interactions Cell-Biomaterial
Vacancy: V50.3802

The Eindhoven University of Technology (TU/e) is seeking an ambitious PhD candidate to investigate the quantification of the mechanical interactions between functionalized (bio)materials and living cells/tissues. Research carried out by the successful candidate will be part of greater and exciting efforts aiming at establishing a new Platform for the Live-Quantification of Cell and Tissue Mechanics at the TU/e.

Eindhoven University of Technology

TU/e is a University of Technology with a focus on Health, Energy and Mobility. Within the Health area, several departments cooperate on topics such as Chemical Biology, Regenerative Medicine, Computational Biology, and Biosensing, with close links to healthcare and industry. TU/e is an open and inclusive university with short communication lines. The people are curious, collaborative, and strive for excellence. TU/e enables its academic staff to develop research and education at an internationally renowned level. Our lively campus community facilitates connections between staff and students, in an open, friendly, vibrant atmosphere that welcomes and inspires.

Biomedical Engineering

The Department of Biomedical Engineering (BME) offers a research driven BME Bachelor program and Masters in Biomedical Engineering and Medical Engineering in its Graduate Program. Its research areas range from Molecular Bioengineering and Imaging, Biomechanics and Tissue Engineering to Biomedical Imaging and Modelling. The department has more than 800 students and up to 200 tenured and non-tenured employees.

Job description

The candidate will generate new computational algorithms to quantify the mechanical interactions between living cells/tissues and functionalized (bio)materials by means of advanced image-analysis methods and experimental techniques for cellular force inference (e.g. Traction Microscopy, Video Force Microscopy, Stress Microscopy and Laser Ablation). The successful candidate will build on pre-established analytical and finite-element computational algorithms to further develop new methodological approaches for the handling of novel experimental setups currently unavailable in the field. The PhD candidate is expected to do scientific research in the field described above, write a doctoral thesis and publish research results in scientific journals. An educational and professional development program is offered to all PhD candidates. A small part of the position involves teaching in courses offered by the group as well as to contribute to the co-supervision of bachelor and master students.

Job requirements

We are accepting applications from enthusiastic and highly talented candidates who are interested in a dynamic, stimulating and ambitious environment to perform their research. We are looking for candidates that meet the following requirements:

- The candidate should have a background in (bio)Mechanical or (bio)Materials or Civil or Physical Engineering (or an equivalent one) and have previous experience with computational modelling via direct/inverse finite-element methods (or similar). Basic/advanced knowledge of Cellular Biology and/or previous experience with theoretical/analytical modelling will be considered as a relevant added values.
- The candidate is expected to have conspicuous previous experience with computer programming (e.g. Matlab or Fortran or C/C++ or similar) in order to be able to work on custom finite-element platforms as well as on commercial ones (e.g. Ansys, Nastran, Comsol or similar).
- The candidate should be able to effectively communicate scientific ideas, foster collaborations and have a capability for independent thinking.
- Moreover, the candidate should be able to work independently within a dynamic team and be proficient in written and spoken English.

The position will be based at the Eindhoven University of Technology (TU/e) in the Netherlands. TU/e has a strategic focus on Health, Energy and Mobility. Within the Health area, several departments collaborate on topics such as Chemical Biology, Regenerative Medicine, Computational Biology, and Biosensing, with close links to healthcare and industry.

The research will be mainly conducted within the Soft Tissue Engineering and Mechanobiology (STEM) group in the Department of Biomedical Engineering under the supervision of Dr Vito Conte and prof.dr. C.V.C. Bouten, who heads the STEM group. prof.dr. C.V.C. Bouten's STEM group concentrates on the study of disease progression as well as on the engineering of soft tissues, which are aimed at either the replacement of diseased or malformed tissues, or the development of in-vitro model systems of developing tissues. Results are used to conceive possible anti-cancer mechano-therapies as well as to design novel approaches of in situ tissue regeneration with principal application in the cardiovascular area (heart valves and vessels), organ regeneration (heart, cornea, and kidney). The group houses the Cell and Tissue Engineering laboratory, a shared research infrastructure operating at the international forefront of the engineering of living, load-bearing tissues.

Conditions of employment

We offer

- A challenging job at a dynamic and ambitious University and in an enthusiastic team.
- The appointment will be on a full-time basis for a period of four years with a yearly evaluation.
- Support with your personal development and career planning including courses by offering every PhD student a series of courses in the PROOF program as an addition to your scientific education.
- Gross monthly salaries are in accordance with the Collective Labour Agreement of the Dutch Universities (CAO NU), increasing from € 2.325,= per month initially, to € 2.972,= in the fourth year.
- An attractive package of fringe benefits, including excellent work facilities, support in moving expenses and commuting expenses, pension scheme, extra holiday allowance 8% in May, end-of-year bonus of 8.3% in December and excellent sports facilities.

Information and application

Information

- Information about the Biomedical Engineering department at TU/e see: <https://www.tue.nl/en/university/departments/biomedical-engineering/>
- Information about the Soft Tissue Engineering & Mechanobiology group see: www.tue.nl/STEM
- Questions regarding the academic content of the position can be directed to prof.dr. C.V.C. Bouten (e-mail: c.v.c.bouten@tue.nl)
- Information about the employment conditions at TU/e see: <https://www.tue.nl/en/university/working-at-tue/working-conditions/>
- Other information can be obtained from the HR department, e-mail: HRServices.Gemini@tue.nl
- Links of interest: Vito Conte's [webpage](#), prof.dr. C.V.C. Bouten's [webpage](#).

Application

If you would like to apply, please send us your application by using the 'apply now' button on the TU/e website. Your application should be addressed to prof.dr. C.V.C. Bouten. Your application must include:

- One-page personal motivation letter.
- CV including the names and contact details of two recent references.
- University transcripts including courses taken during Bachelor and Master's programs.

Only complete applications will be considered. Screening of applicants will start as soon as applications are received and will continue until the position has been filled.

Please keep in mind: you can upload only 5 documents up to 2 MB each.