PhD topics in Advanced Materials

The Faculty of Science and Engineering at the University of Groningen offers 9 full scholarships for PhD projects within our research theme Advanced Materials [https://www.rug.nl/research/fse/themes/advanced-materials/]. This document gives information about the research theme and the topics to which candidates can apply. For more information on the PhD scholarship positions that we offer and on how to apply, please see the vacancy text on the website of the University of Groningen.

Description of the research theme
Advanced Materials research in Groningen is strong in interdisciplinary collaborations with contributions from physics, chemistry, bio-nanoscience and with links to health sciences, engineering, and information sciences. The core is focused on the design and scientific study of materials for functionality. Current research directions in our teams study complex material architectures and devices that go beyond current limits in size, speed, or control in assembly, often with seemingly incompatible components. The work aims to understand processes at length scales ranging from atomic and molecular to supramolecular structures to the building blocks of life. With our state-of-the-art instrumentation for control and characterization we have expertise that goes beyond static structuring and elucidation of material properties, and our research also exploits the study of dynamics of processes and phenomena. There are strong ties between experimental groups and theoretical groups that together cover multi-scale modelling over all length and timescales.

Topics
Candidates are invited to apply to one of the following topics:

1. Green chemistry & sustainable materials, with strong links to innovative polymer research.
2. Physics of Life, in particular physics of cancer and microscopy, spectroscopy and modeling work from the single-molecule to single-cell scale.
3. Energy materials, now in particular active with research on solar cells with novel materials, battery research and thermo-electrics research.
4. Materials for health, with links to structural biology, novel adhesives and anti-microbial materials.
5. Emergent electromagnetic and optical functionalities, now mainly active with studies on stacks of 2D materials, skyrmions, and spintronics in new materials systems.
6. Out of equilibrium chemical systems, with a link to studies of the fundamental principles of life.
7. Cognitive Systems & Materials, in particular the CogniGron research program.

Supervisors
Please select a prospective supervisor from our website:
https://www.rug.nl/research/fse/themes/advanced-materials/participants/

Before approaching a supervisor, draft a short research proposal (300-500 words) fitting one of the seven themes and the expertise of the supervisor you identified. Also prepare a short CV of max. 2 pages. With these documents at hand you may contact the supervisors & coordinator for further discussion, advice or in case you have questions. Please be advised that our supervisors receive very many emails and it may take a while before you receive an answer. A communication line that does not refer to the vacancy and does not include CV and proposal may not be answered.