Materiomics: Training students to become future-proof materials scientists

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FACULTY OF SCIENCES
UHASSELT
MASTER MATERIOMICS

MASTER OF MATERIOMICS

Society is confronted with a series of **interdisciplinary grand challenges**, including climate change, the energy transition, global pandemics, the need for secure communication technologies, …. The development of **sustainable and innovative materials** is **critical** in the search for solutions to these societal issues.

In the Master of Materiomics, materials are studied from an interdisciplinary perspective, building bridges between chemistry and physics, and also between experimental and theoretical or computational approaches.

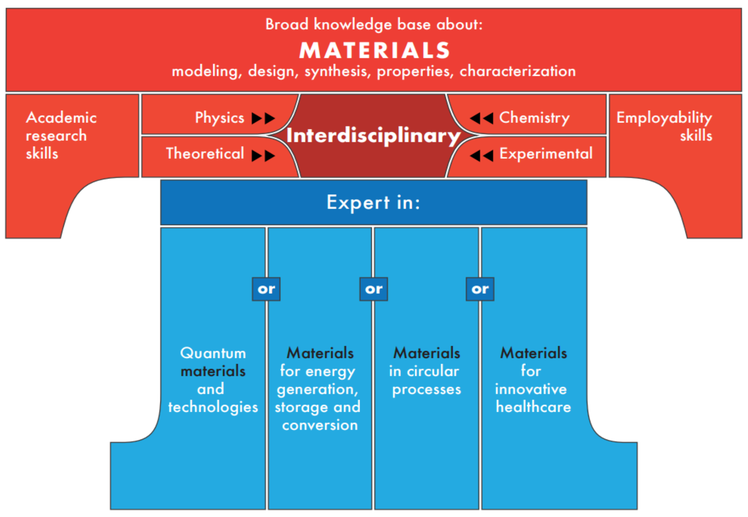
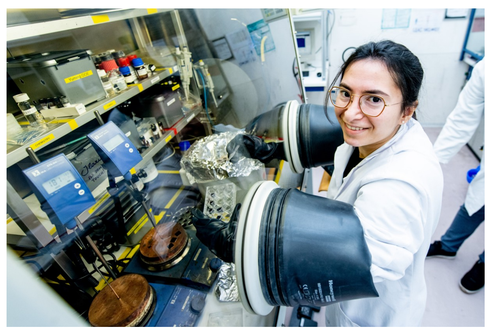
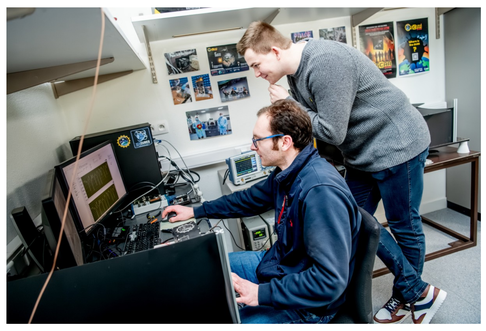


Figure 1. *Profile of the Master of Materiomics: interdisciplinary T-shaped professional. Red: solid foundation (1st master year) and blue: specialization (2nd master year)*





IMPACT

The Master of Materiomics directly addresses the growing demand for highly-skilled profiles in strategic sectors like energy transition, advanced healthcare, and quantum technologies.

- Photovoltaic energy conversion,
- Green hydrogen from photoelectrocatalysis
- Batteries (Li-ion, Na-ion, Li-S, etc.)
- CO_2 conversion into added value chemicals

- High-tech quantum sensors
- Quantum computers for encryption, security and data transmission

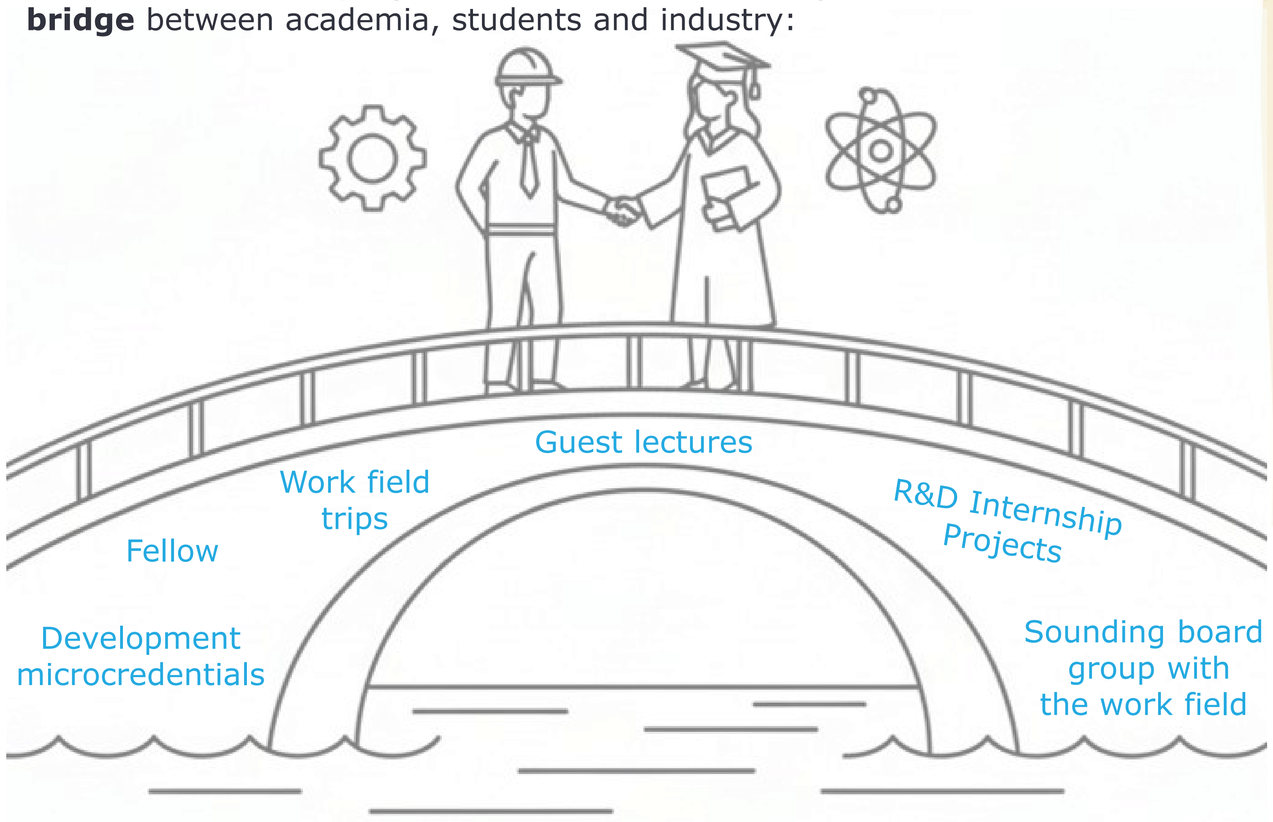
- Design to recover
- Sustainable alternatives to the Li-ion battery
- Upcycling residual flows into activated carbon
- Reusing plastic waste via new polymerization processes

- Tissue engineering
- Materials for drug delivery
- Organic electronics – biosensors
- Use of biological processes in materials' design

Materiomics' alumni are equipped with technical (hard) skills in one of the four specializations and essential soft skills, such as systems thinking and interdisciplinary collaboration, which makes them strong profiles to drive innovation and lead the material transitions required across various high-tech and sustainable sectors.

BRIDGE BETWEEN ACADEMIA AND INDUSTRY

The Materiomics' program takes the following initiatives to make the **bridge** between academia, students and industry:



- R&D Internship projects: >20 ≠ R&D groups in external companies or institutes
- Guest lectures within courses: Guest lecturers from Umicore, VITO, Aurubis, …
- Work field trips: eg. Course Additive Manufacturing (VITO), Course New materials for photovoltaics (EnergyVille)
- Guest lectures for broad audience: eg. Opening lecture (VITO), Materialize the future (VITO, J&J), …
- Sounding board group with the workfield
- Development microcredentials
- UHasselt Fellow: Walter Eevers

"The internship provided me with valuable insights into the **R&D processes of large companies** in the competitive sustainable technology sector."

Robin Quanten, 2023,
Umicore (Olen, Belgium)

"*The internship took place in an **international and interdisciplinary environment**, which led to interesting exchanges with colleagues from diverse backgrounds.*"

Aleksandra Slusarczyk, 2025,
CHILL
(Geleen, The Netherlands)

R&D INTERNSHIP TESTIMONIALS

"The internship granted me significant autonomy and the opportunity to actively contribute to interdisciplinary research. I was treated as a peer scientist, rather than a student."

Gijs Dewitte, 2024,
FEP (Dresden, Germany)

"*Afterward, I felt that I had gained valuable **scientific and management skills** and that I had genuinely contributed to the research.*"

Brent Van Ballaer, 2023,
VITO (Mol, Belgium)

LET'S COLLABORATE !

Scan here to leave your contact details

We are continuously searching for opportunities to integrate work field experience in the Materiomics' curriculum. Please connect if you wish to offer:

- R&D INTERNSHIP PROJECTS
- GUEST LECTURES
- MASTER THESIS PROJECTS
- SOUNDING BOARD GROUP
- …

Prof. dr. An Hardy (EMT chair Materiomics)
Guest lectures
Sounding Board Group
R&D Internship projects

dr. Sarah Doumen
General information
Guest lectures
Sounding Board Group

Prof. dr. ir. Koen Vandewal
Master thesis projects

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