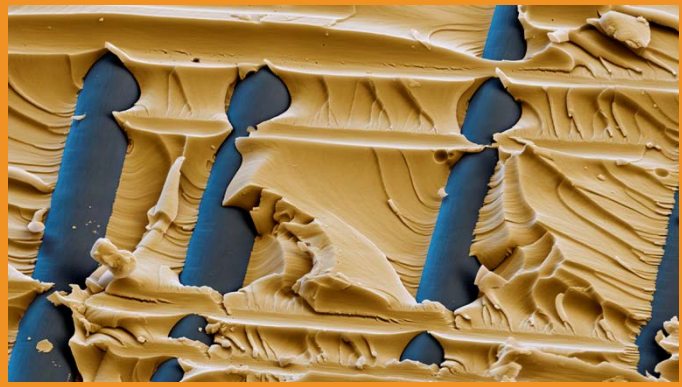
4TU.HTM

Welcome to the 3rd 4TU.HTM symposium

Dutch Materials

Materials for Energy
Composite Materials

October 13, 2017



TU Delft Delft University of Technology

TU/e Technische Universiteit Eindhoven University of Technology

UNIVERSITY OF TWENTE.

WAGENINGEN UR For quality of life

4TU.HTM

4TU Research Centre High-Tech Materials (4TU.HTM)

aims to

- strengthen collaboration between the four TU's
- strengthen the research field Materials Science and Engineering
- stimulate education in Materials Science and Engineering

http://www.4TU.nl/HTM

4TU.HTM

- Officially established November 10, 2014
- Initially assigned for 4 years 2014 – 2017
- k€ 150 per year coordination: organisation and activities
  k€ 500 per year research programme
- To be continued in 2018 and 2019

http://www.4TU.nl/HTM

4TU call for research programmes: *High tech for a sustainable future*
https://www.4tu.nl/nl/nieuws/call_hightech/

- Consortium of researchers from three or four universities
- Align with the UN Sustainable Development Goals, the EU's Societal Challenges and Key Enabling Technologies
- 2018 – 2021, k€500 – 1000 per year, 25% matching from faculties
- Research themes: High tech to feed the world, Sensing Science and Technology, Robotics, Health & Vitality, Resilience, Advanced Materials, Energy Conversion & Storage
- Expression of interest: October 30
  Matchmaking: November 10
  Proposal (max. 6 pages): February 19

4.2 Assessment criteria

- the **scientific quality** and viability of the proposed research programme (science case);
- the **alignment with the stated programme themes**, the UN Sustainable Development Goals, the EU's Societal challenges and/or Key enabling technologies (policy case);
- the expected impact in terms of **innovations** and applications (innovation case);
- the quality of the plans for **(inter)national collaboration** with non-4TU universities, societal partners and/or industrial partners (partnership case);
- the quality of the plans and potential of **long-term continuity** of the programme (business case);
- the possible contribution to the **teaching** activities of the 4TU's (education case);
- the quality of the plans for a **contribution to Open Science** (open science case);
- the **quality of the researchers** and added value of their collaboration in the programme;
- the plans for linking the programme to the **network activities** of a current 4TU research centre, if applicable.

Activities 4TU.HTM

- Research programme *New horizons for designer materials*
- Yearly symposium Dutch Materials
- Support joint Materials Science workshops
- Improve accessibility Materials Science and Engineering
- Stimulate Summer Schools and Graduate Courses
- Finance collaborative projects
- Develop activities to attract students
- Website www.4TU.nl/HTM

Research programme *New horizons for designer materials*

- *Understanding structure formation in hierarchical hybrid materials through in situ liquid phase microscopies*, Joe Patterson, Mohammad Moradi (TU/e):
- *“From Flatland to Spaceland“: towards advanced, 3-dimensional materials bottom-up, from polymer decorated nano- and microstructures*, Maciek Kopec (UT, TU/e)
- *Reversible crosslinking: a potent paradigm for designer materials*, Nick Tito (TU/e)
- *Metamaterials with tunable dynamical properties*, Priscilla Brandão Silva (TU/e)
- *Superconducting carbon nanotubes composite as vertical interconnect for qubit integration at cryogenic* temperature, René Poelma, Amir Mirzagheytaghi (TUD)
- *Communicating surfaces*, Danqing Liu (TU/e)

Poster session, 13:30 h - 14:30 h

In 2017 ***Joe Patterson*** *received a Marie-Curie grant and* ***Danqing Liu*** *a Veni-grant, strengthening their 4TU.HTM research line.*

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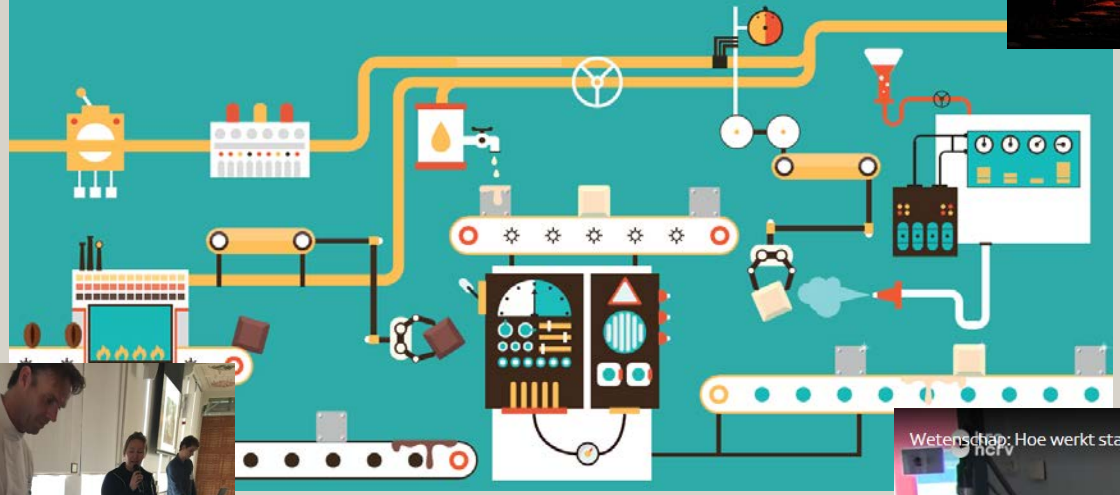
The Unexpected Science of Steel and Chocolate

Ma 13 maart 2017 · 10.00-17.00 uur
Science Centre · TU Delft



Willem Wever TV-item
Sept. 3, 2017

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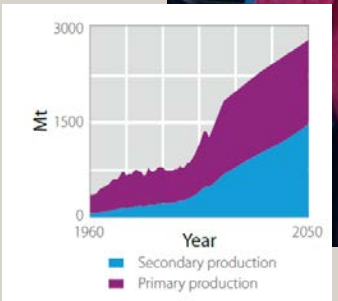
Joint workshop
4TU.HTM and
4TU.Ethics

28 March 2017
10:00 - 17:00
Utrecht

Today:
Good Governance of Climate and Energy Risks
Behnam Taebi
Delft University of Technology



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MESA+
INSTITUTE FOR NANOTECHNOLOGY

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Ameland Summer School

Smart Materials

28 May – 2 June 2017

Organised by:
4TU.Research Centre High-Tech Materials (4TU.HTM)
MESA+ Institute for Nanotechnology, University of Twente
Zernike Institute for Advanced Materials, University of Groningen
Institute for Molecules and Materials, Radboud University Nijmegen

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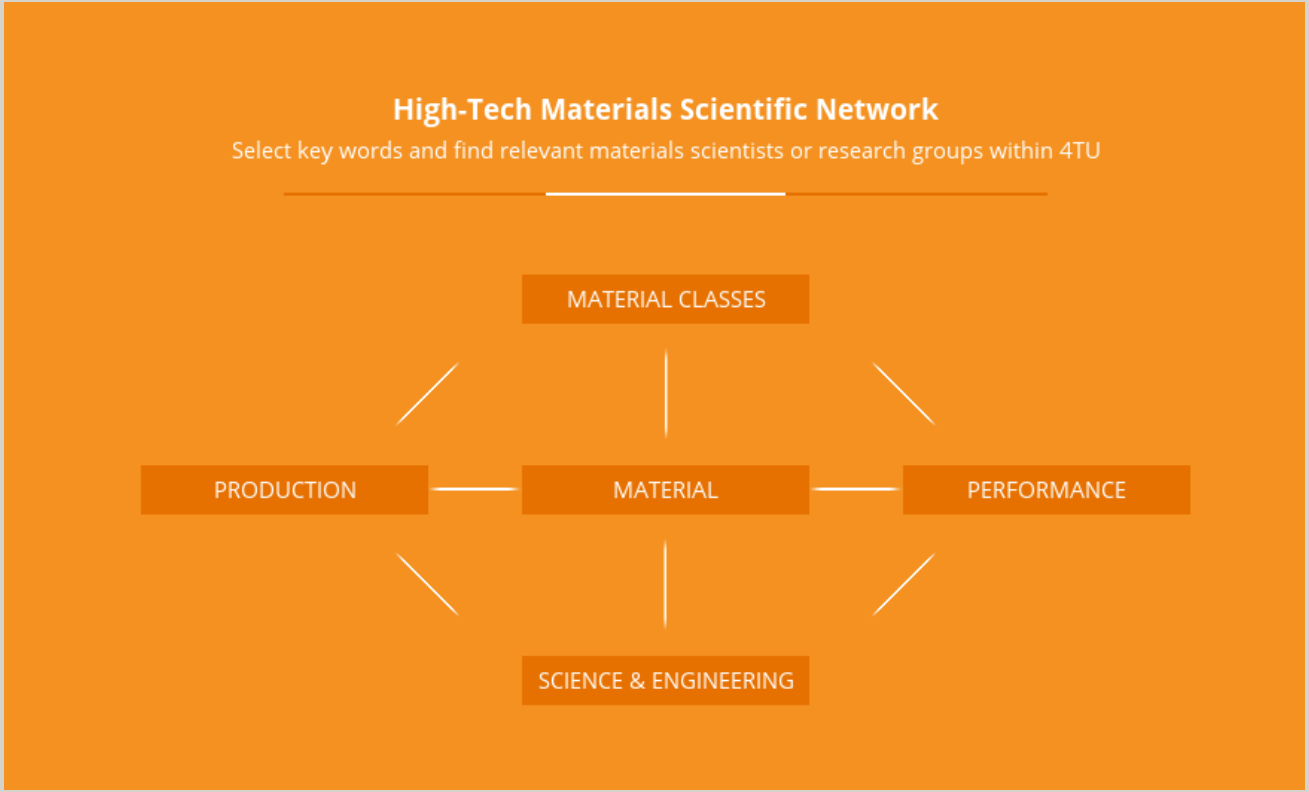
More activities

- Collaboration with 4TU.Centre for Research Data: poster session Maria Cruz
- Lectures by international experts related to the research programme
- Database for materials research facilities in development
- 4TU.HTM Poster Prize Dutch Polymer Days
- Soft Matter CryoTEM Workshop, March 2017
- International Conference on Liquid Phase Electron Microscopy, September 2017
- 4TU.Orthopaedic Bioengineering conference, September 2017
- Website www.4tu.nl/htm

http://hightechmaterials.4tu.nl/



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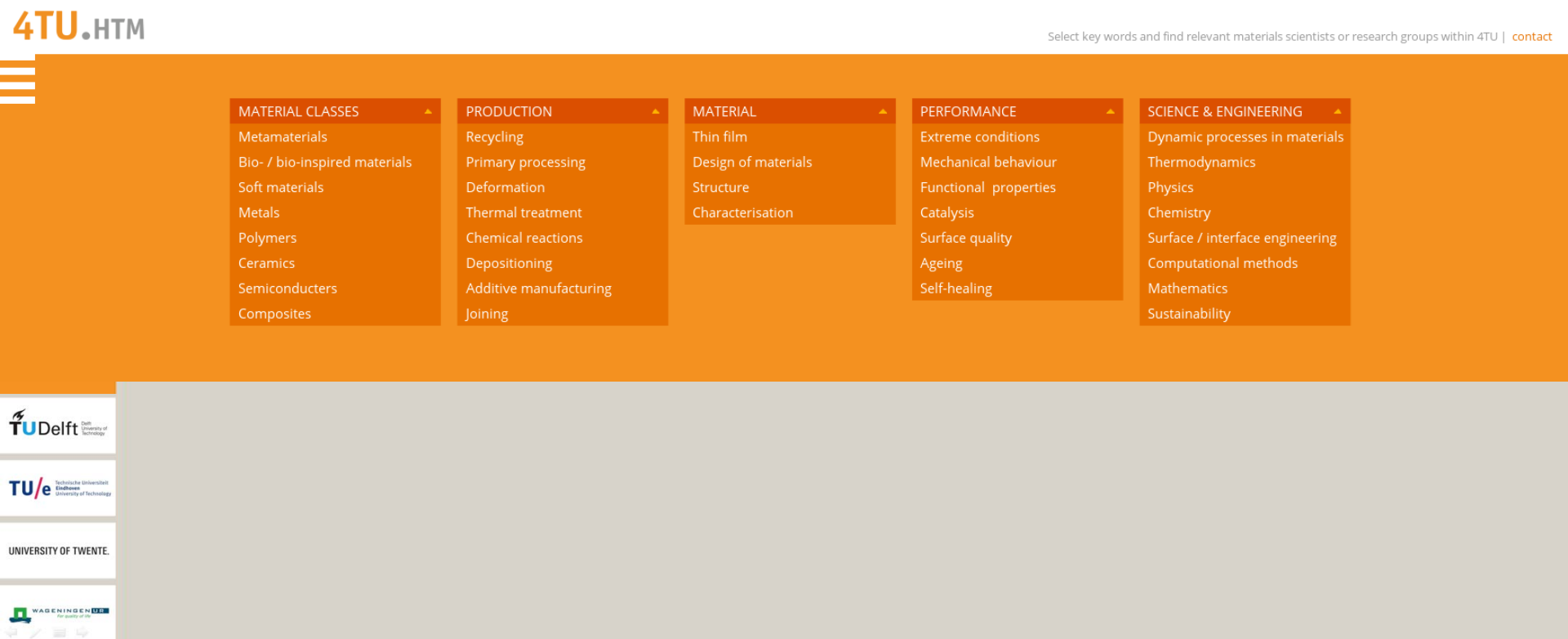

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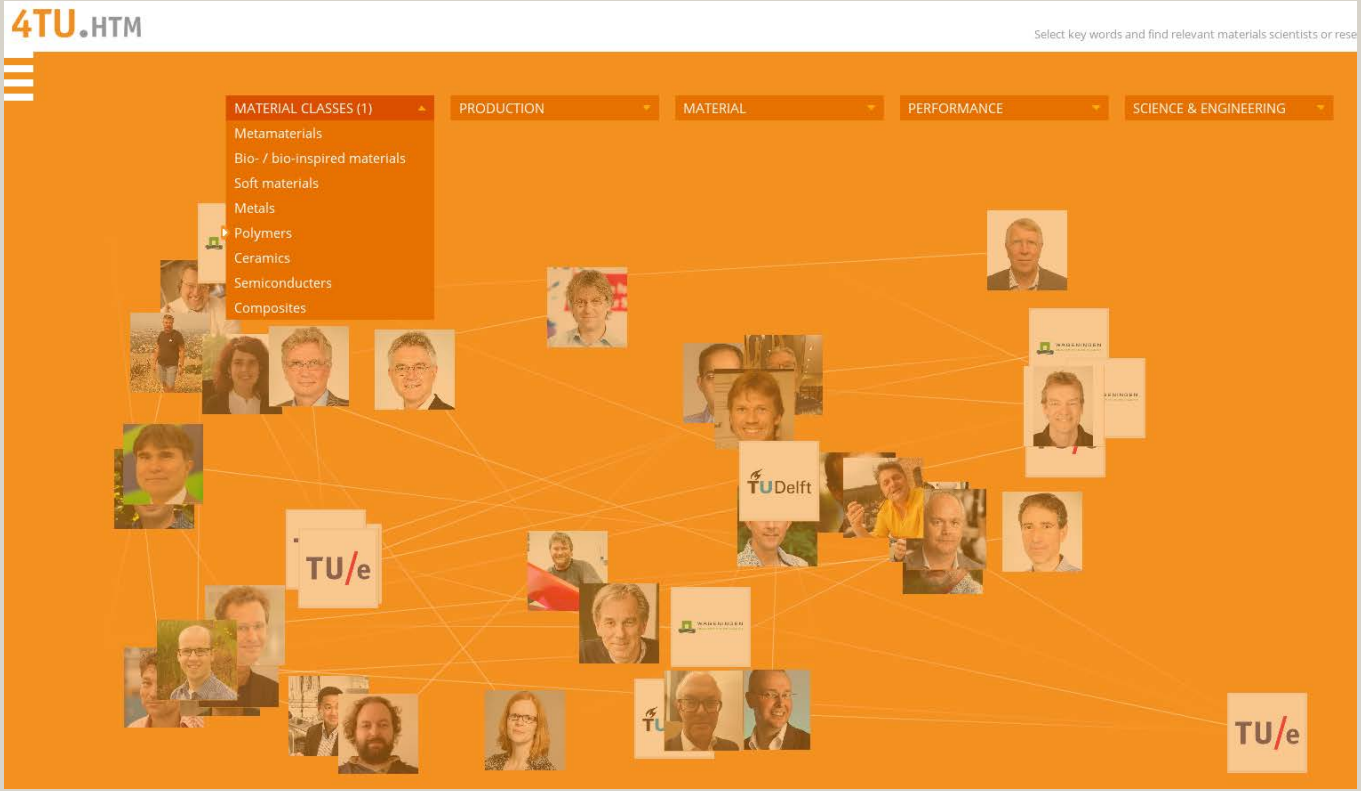

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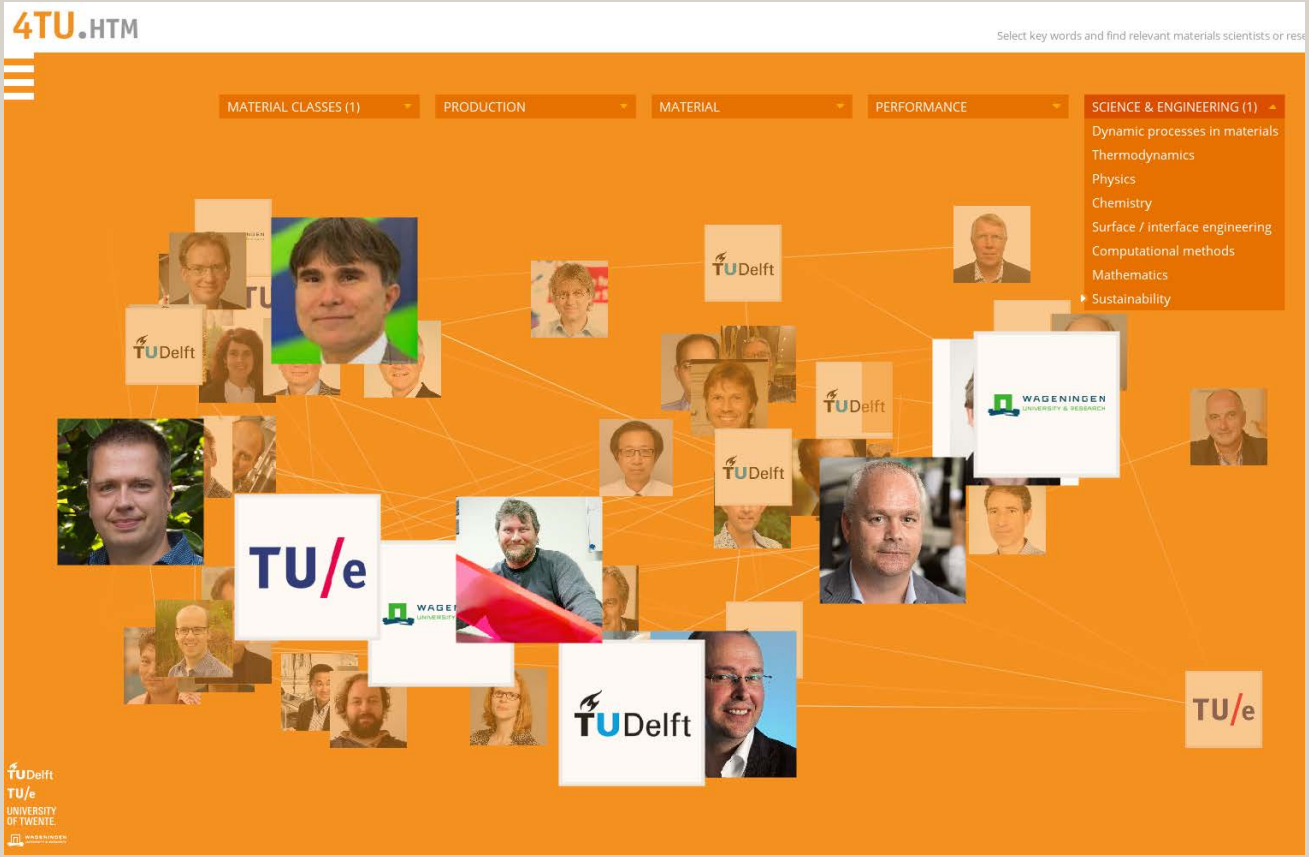

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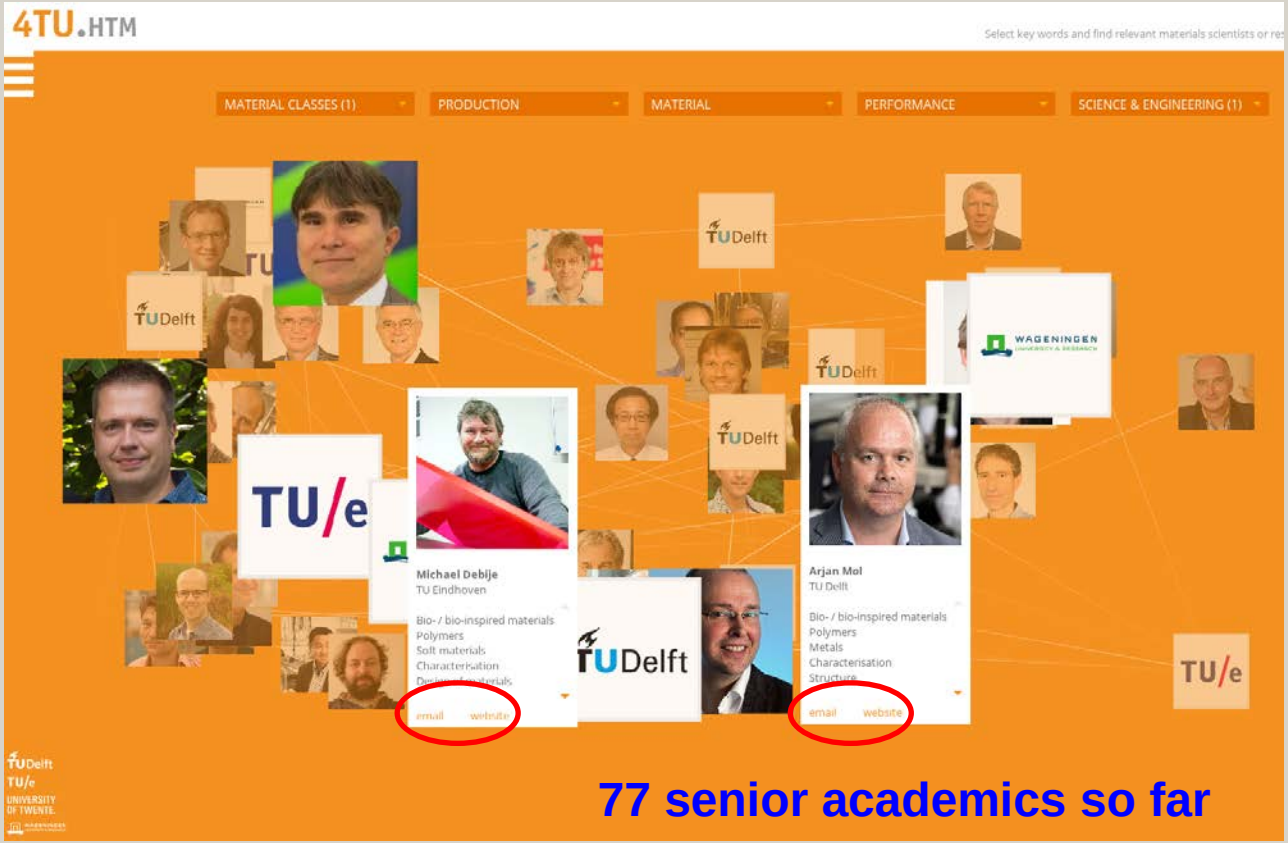
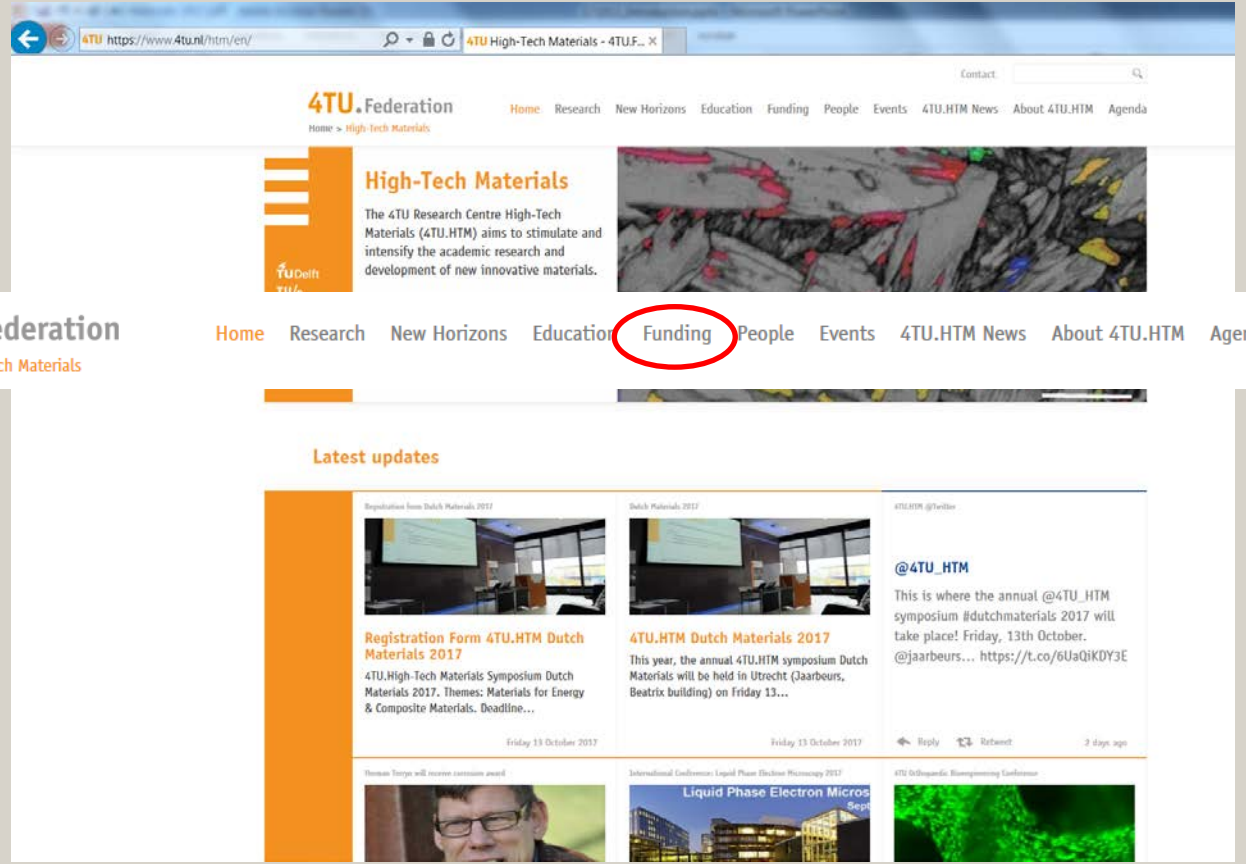
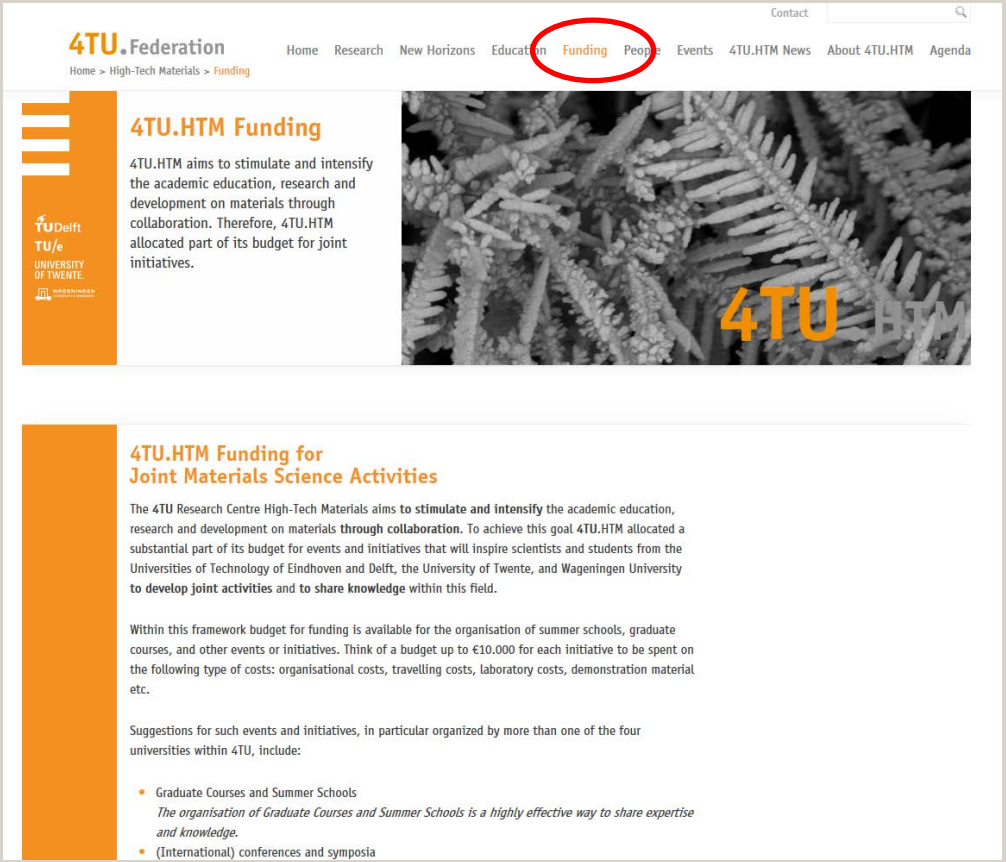


website http://www.4TU.nl/HTM



website http://www.4TU.nl/HTM: Funding for collaboration



Contact

4TU.Federation

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4TU.HTM Funding

4TU.HTM aims to stimulate and intensify the academic education, research and development on materials through collaboration. Therefore, 4TU.HTM allocated part of its budget for joint initiatives.

4TU.HTM Funding for Joint Materials Science Activities

The **4TU** Research Centre High-Tech Materials aims **to stimulate and intensify** the academic education, research and development on materials **through collaboration**. To achieve this goal **4TU.HTM** allocated a substantial part of its budget for events and initiatives that will inspire scientists and students from the Universities of Technology of Eindhoven and Delft, the University of Twente, and Wageningen University **to develop joint activities** and **to share knowledge** within this field.

Within this framework budget for funding is available for the organisation of summer schools, graduate courses, and other events or initiatives. Think of a budget up to €10.000 for each initiative to be spent on the following type of costs: organisational costs, travelling costs, laboratory costs, demonstration material etc.

Suggestions for such events and initiatives, in particular organized by more than one of the four universities within 4TU, include:

- Graduate Courses and Summer Schools
  The organisation of Graduate Courses and Summer Schools is a highly effective way to share expertise and knowledge.
- (International) conferences and symposia

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website http://www.4TU.nl/HTM: Funding for collaboration

to develop joint activities and to share knowledge

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Your contributions

- Organise joint activities
- Graduate Courses
- Draw attention to Materials Science and Engineering
- Development of demonstration material
- .....

Morning session: **Materials for energy**

- *Materials challenges for terawatt-scale photovoltaics*
  Prof.dr. Wim Sinke, ECN Solar Energy / UvA / AMOLF
- *Nanomaterials for energy applications: a single particle approach*
  Dr. Andrea Baldi, DIFFER (Dutch Institute for Fundamental Energy Research)

Coffee Break

- *Photochromism in rare earth metal-oxy-hydrides*
  Fahimeh Nafezarefi, M.Sc., Delft University of Technology
- *$BaSi_2$: An earth-abundant absorber material for thin-film solar cell applications*
  Yilei Tian, M.Sc., Delft University of Technology

- *Good Governance of Climate and Energy Risks*
  Dr.ir. Behnam Taebi, Delft University of Technology

13:00 – 13:30 h **Lunch**

Stand-up Poster Presentations of 4TU posters on Materials Science and Engineering, incl. *New Horizons in Designer Materials*

Poster session

Afternoon session: **Composite materials**

- *Flying bits and their fundaments - Basic research on composite materials and processing*
  Prof.dr.ir. Remko Akkerman, University of Twente
- *Experimental and numerical investigation of hygrothermal aging in wind turbine blade composites*
  Ir. Iuri Rocha, Delft University of Technology / WMC

Coffee break

- *Manufacturing rate vs. performance: How fast can we go?*
  Dr. Francisco Sacchetti, University of Twente / TPRC
- *Matrix-dominated failure in thermoplastic composites*
  Prof.dr.ir. Leon Govaert, Eindhoven University of Technology / University of Twente

16:30 h Closure and drinks

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4TU Research Centre High-Tech Materials (4TU.HTM)

- Strengthen collaboration between the four TU's
- Strengthen the research field Materials Science and Engineering
- Stimulate education in Materials Science and Engineering

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