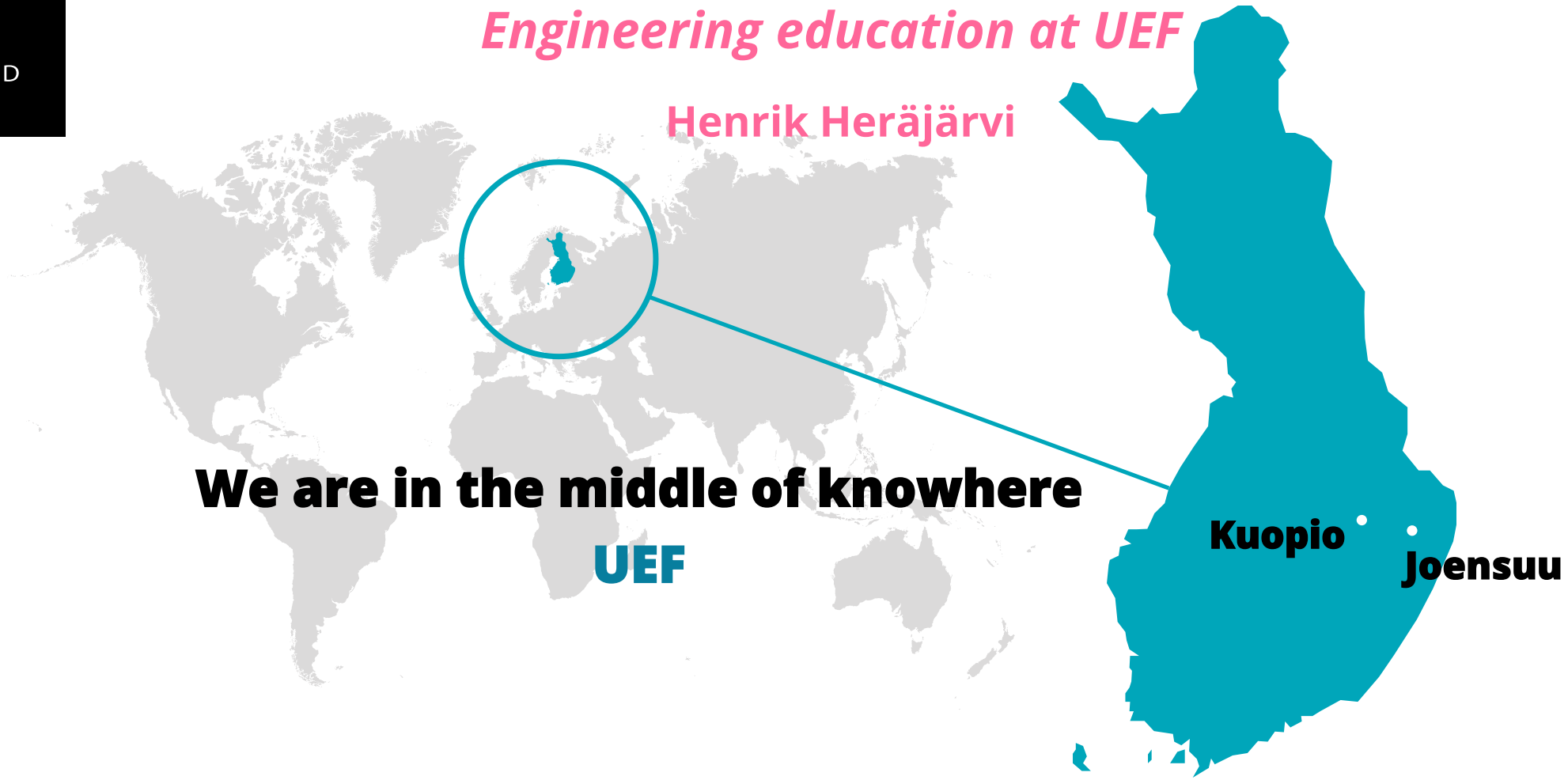
UNIVERSITY OF EASTERN FINLAND

Sustainable Technology

Engineering education at UEF

Henrik Heräjärvi



We are in the middle of knowhere

UEF

UEF key figures

4 faculties	**12** fields of study	**110** major subjects
3,400 staff	**17,200** degree students	**14,500** adult education students
1,450 international degree students	**3,599** degrees in 2024	**3,450** scientific publications in 2024

UEF// University of Eastern Finland

Multidisciplinary university

12

FIELDS OF STUDY

- Humanities
- Educational sciences and teacher education
- Economics and business administration
- Engineering
- Natural sciences
- Medicine and pharmacy
- Forest sciences
- Law
- Psychology
- Theology
- Health sciences
- Social sciences

Forest sciences since 1982

Staff

120

Students

+ 600

Teachers: >30
Researchers: >80

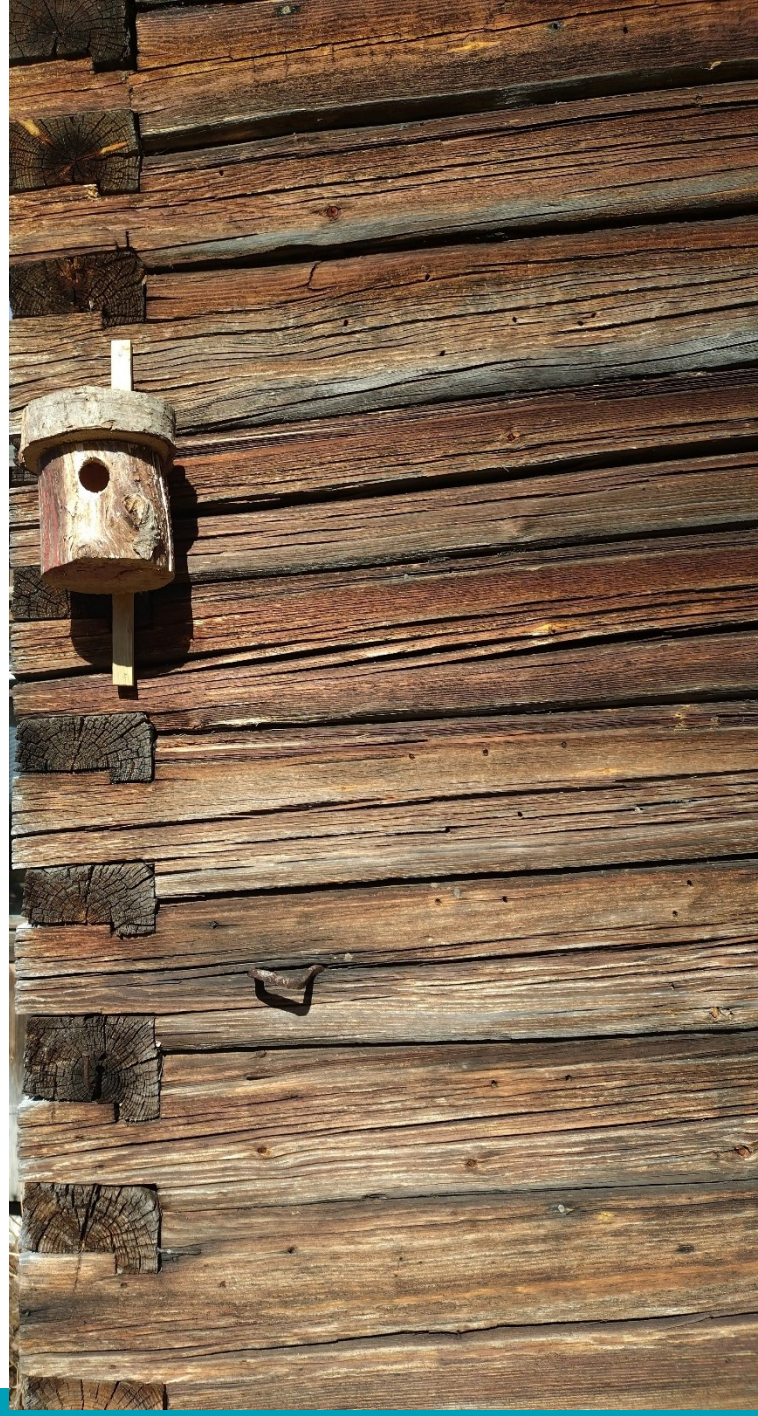
16 professors

50 doctoral students & post docs
50 exchange students
500 BSc / MSc students

75% international students

UEF – Why engineering education?

- Finnish companies have an urgent need of engineering skilled workers with a university degree
- Nation wide lack of experts: need for 130,000 workers by 2035, half of which with higher education



Sustainable technology since 2023

- **Engineering education since 2023**
- **Materials sciences & biorefining + computer sciences + information and knowledge management**
  - Understanding on procurement and industrial processing of natural resources (with its problems)
  - Skills for industrial engineering and management + data science
  - New industrial solutions for sustainability challenges

- ✓Ca. 45 students per year
- ✓Chemistry, forest sciences, data processing + much more
- ✓Industry cooperation
- ✓Two paths:
  - ✓ Materials and industrial products
  - ✓ Digital products
- ✓The largest engineering programme at UEF

”Team tech” @ Joensuu campus


Henrik Heräjärvi, Suvi Kuittinen, *et al.*

School of Forest Sciences

Properties and industrial use of wood, sugar biorefining, biochar

Markku Hauta-Kasari, Markku Kuittinen, Ilkka Jormanainen, *et al.*

School of Computing

AR/MR/VR/XR-technologies, industrial optics, robotics, spectral imaging








Antti Haapala, Janne Jänis, Jarkko Saarinen, Merve Atasoy, Aitor Barbero-Lopez, Juhani Marttila, *et al.*

Materials technologies

Biorefining, plastic recycling, sustainability, wastewater treatment, wood preservation, etc.

Ongoing (/completed) PhD projects

More info:

antti.haapala@uef.fi
henrik.herajarvi@uef.fi

Student	Graduation	Topic	Cooperation
Eija-Katriina Uusi-Tarkka	9/2024	Processing and properties of wood fibre textile all-cellulose composites	University of Borås (SWE), Spinnova Ltd
Marta Cortina-Escribano	12/2024	Selective breeding and taxonomy of Ganoderma lucidum originating from Finland	Luke
Qing Zhao	12/2024	Thermochemical biorefining of hardwood bark	Luke
Yeray Lopez-Gomez	6/2025	Thermochemical fixation of antifungal compounds to wood	Luke & Laval University Quebec (Can)
Nikolaos Papamatthaiakis	2025	Native hardwood species in Northern Brazil for alternative bioeconomy uses	University of Piauí (Brazil)
Reeta Stöd	2025	Properties of Scots pine sawlogs from selective thinning stands	Luke, Stora Enso Ltd
Mariina Günther	2026	Formation and chemical features of kelo wood from Scots pine	
Juhani Marttila	2026	Properties of thermo-mechanically modified Scots pine, Norway spruce and birch	Luke, AvantWood Ltd
Aitana Zoco de la Fuente	2027	Antiviral properties of wood-derived chemicals	BOKU (AUT), Stora Enso Ltd
Mohammad Azarmi	2027	Effect of classroom interior materials on teacher's well-being	Nihon Fukushi University (JAP), UMN (USA)
Mika Keskisalo	2027	Advanced connection methods for the use of CLT cut-offs	KJ Engineering office, Karelia UAS
Joona Lampela	2027	Properties of surface carbonized wood	Hiil Ltd
Sini Rantanen	2028	Forest sector education development in Uruguay	Karelia UAS
Yang Xu	2028	Global effects of past, present, and future wood use on fossil GHG emissions	University of Tennessee (USA), Aalto University

Infrastructure

UEF–Luke–Karelia UAS

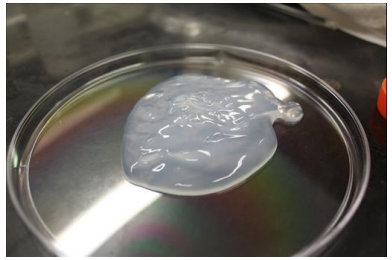
- ✓ Wood and wood product characterization
- ✓ Natural fibre based product properties
- ✓ Bioenergy and chemical biorefining
- ✓ Chemical analytics
- ✓ Testing of wood structures (T, RH, acoustics…)

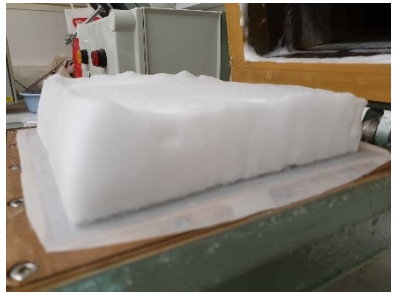






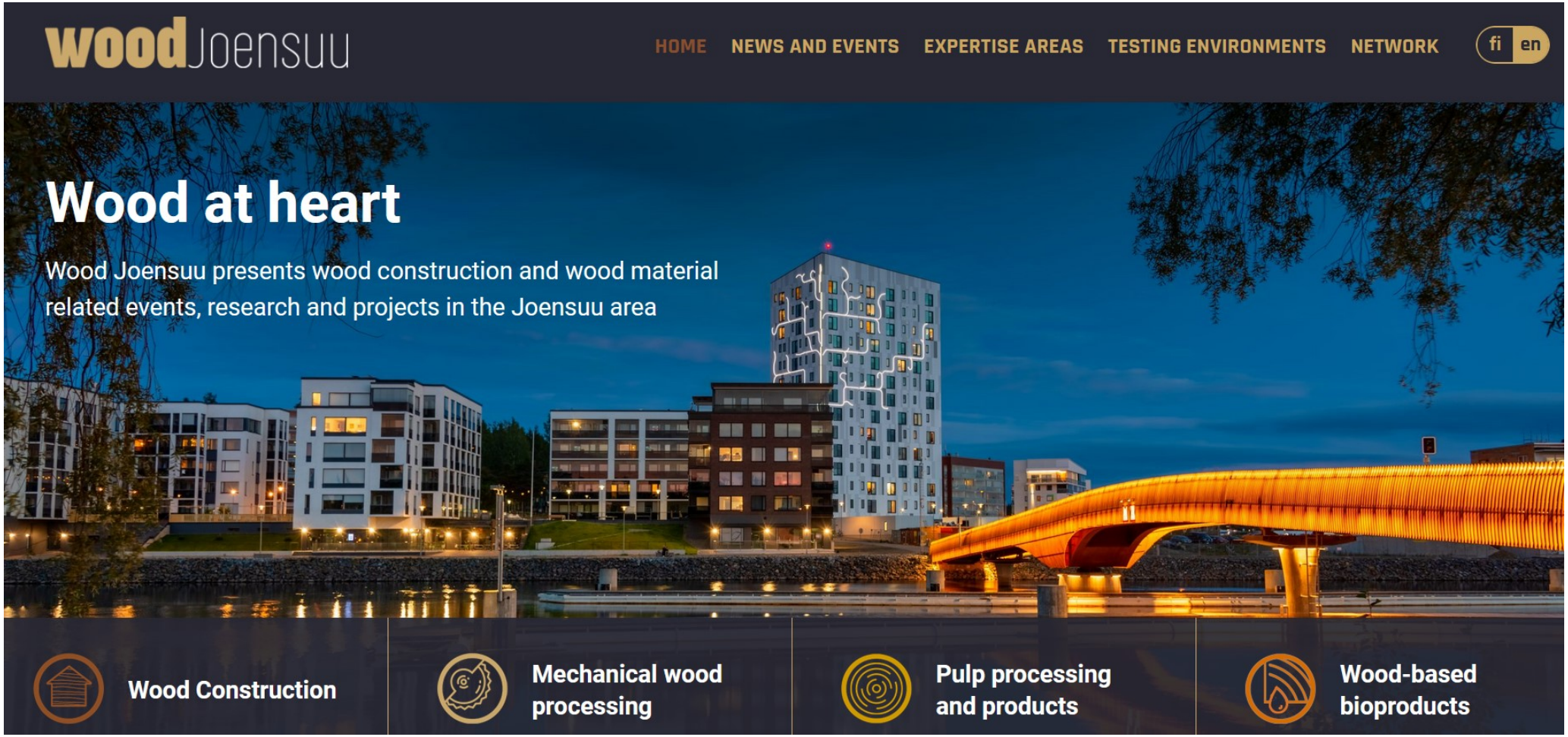




Wood tech services, infra *etc.*

www.woodjoensuu.fi



Forest Joensuu

The entire education chain: Vocational Education & Training consortium Riveria, Karelia UAS, UEF

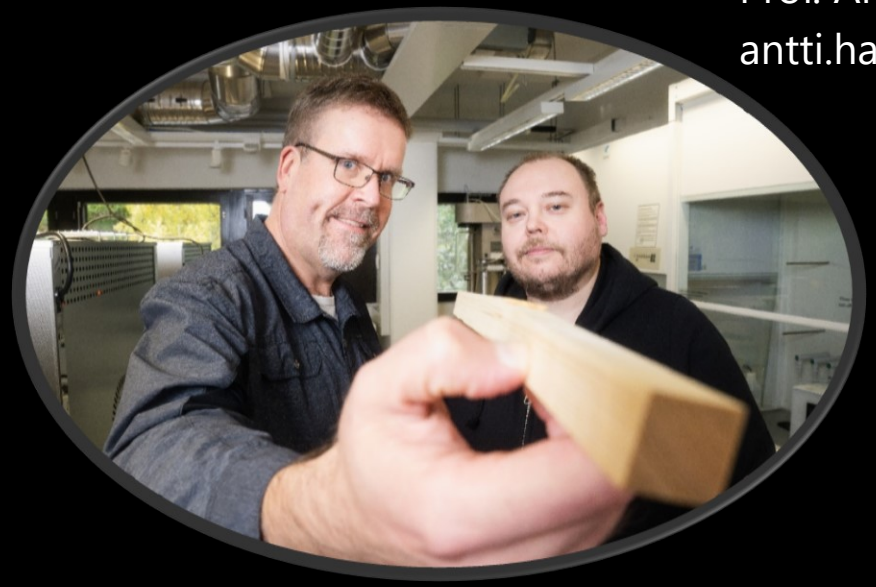
Extraordinary RDI hub: UEF, Luke, EFI, Karelia UAS, Syke + industries

1/3 of annual turnover and 10% of jobs in region of North Karelia relate to forest bioeconomy

With 600 forest bioeconomy experts, Joensuu is a globally recognized centre of forest bioeconomy

https://businessjoensuu.fi/en/forestjoensuu

Prof. Antti Haapala
antti.haapala@uef.fi



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Wood is good!

Looking forward to collaboration with WCA Finland!