

# Development of the portfolio in four clusters

## Cluster leads nominated by the departments

**Biomass refining and advanced  
lignocellulosic materials**

**Cluster lead:**  
**Eero Kontturi**

- Biomass refining
- Fiber and Polymer Engineering
- N5P in Polymer Technology (discontinuing)
- Biological and Chemical Engineering for a Sustainable Bioeconomy (Bioceb)

**Molecular bioscience  
and Industrial biotechnology**

**Cluster lead:**  
**Alexander Frey**

- Biotechnology
- Biosystems and Biomaterials engineering

**Chemical and metallurgical  
engineering**

~~Chemical engineering and circular processes~~

**Cluster lead:**  
**Marjatta Louhi-Kultanen**

- Chemical and Process Engineering
- Sustainable Metals Processing
- Industrial Energy Processes (Advanced Energy solutions)
- European Mining, Minerals and Environmental Programme (EMMEP)

**Chemistry and materials science**

~~Chemistry for renewable energy and functional materials~~

**Cluster lead:**  
**Kari Laasonen**

- Chemistry
- Functional Materials
- Advanced Materials for Innovation and Sustainability (AMIS)
- Master's Programme in Energy Storage

Cluster leads will lead the discussion and development work in the cluster. Responsibility to take forward development actions and participate in portfolio renewal steering group work.

MSc study offerings:  
**CHEM own offerings**  
**AALTO Joint offerings**  
**International offerings**

- International Design Business Management (IDBM) -> (includes compulsory CHEM minor)
- Creative Sustainability CHEM (connects to research focus area 1 & 3)
- Environmental Pathways for Sustainable Energy Systems (SELECT) -> selected courses from all study fields (discontinuing)