



# TECHNOLOGIES FOR A SUSTAINABLE FUTURE

# Åbo Akademi University

<http://www.abo.fi>



- Åbo founded in 1918
- Located in Turku (Åbo)
- 5000 students
- 1500 staff and graduate students



# Faculty of Science and Engineering

Be the solution.



Åbo Akademi

# International Master's Programs

Biomedical Imaging

Information Technology

Sustainable Chemical  
and Process Engineering



# OUR VISION

**We can enable a CO<sub>2</sub> neutral and zero waste industry and society.**

**Our research in chemical engineering and science is driving this change.**

# OUR WAY

We develop feasible and affordable technologies for

- converting biomass into value added chemicals, materials and energy
- direct use of carbon from CO<sub>2</sub>, hydrogen from H<sub>2</sub>O and energy from the sun
- New solutions create new needs, so we work constantly to find more efficient processes and sustainable alternatives.

**This is our way. This is the only way.**

# CASE EXAMPLES

**Our strength** lies in molecular process technology and energy related research.

Our multidisciplinary work and close co-operation with industry has resulted in unique solutions within areas such as bio-based fuels, chemicals and materials.

**Biomass is a renewable resource with a unique chemical composition.**

**We develop new catalysts and reaction technology to convert biomass into high-value chemicals.**

**We use components from wood to construct value-added products by 3D printing.**

# **VALUE FROM BIOMASS**



# HIGH TEMPERATURE CHEMISTRY AND CIRCULAR ECONOMY

Society, agriculture and industry produce huge amounts of waste.

Thermal energy conversion of side streams reduces the amount of waste and enables recovery of valuable elements.

Together with industrial energy technology partners around the world, we explore novel solutions within the circular economy.

**Solar irradiation is the ultimate source of energy in a sustainable future society.**

**We develop polymer- and perovskite-based photovoltaic systems for the solar cells of tomorrow.**

**By combining physics, chemistry and engineering we can make a difference.**

**LET  
THE SUN  
SHINE IN**



# CO<sub>2</sub> AS A RESOURCE

We develop technology for large-scale CO<sub>2</sub> capture, utilization and storage.

Novel CO<sub>2</sub> conversion products include materials for thermal energy storage and as feedstock for fuel and chemicals production.

# CHEMICAL SENSORS

Chemical sensors are vital for online process analysis, environmental monitoring and health diagnostics.

We develop sensors based on electrochemical principles in order to provide superior analytical tools for future needs.

# DRUGS ARE GOOD, BUT NOT IN OUR SEA!

Household wastewaters contain medical impurities, which end up in the Baltic Sea.

Our research has shown that novel technology combining catalysts with intelligent utilization of oxygen can be utilized to remove these compounds from the water.



Energy and money is constantly wasted in inefficient transmission and conversion processes.

We develop smart and cost-effective industrial solutions for energy efficiency, recovery and supply chain optimization.

# INDUSTRIAL ENERGY EFFICIENCY



We invite applications for highly motivated PhD-students. Call open in summer 2024.

We also have mobility stipends for internships for PhD students and fellowships for post-docs (up to 6 months).

You can also check the web-pages for suitable research groups, and contact the responsible leader directly (and mention FICORE).

If you think you have the right profile for working within the TSF but don't know who to contact, send me an e-mail!

# YOU CAN BE A PART OF THE SOLUTION

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