

MEMBRANE TECHNOLOGY

LUT's Membrane Technology research group is internationally recognized for advancing membrane technology to address industrial and environmental challenges. The group brings together merited professors, postdoctoral researchers, doctoral candidates, and visiting scholars from diverse backgrounds.

The group's facilities are equipped with different types of pressure-driven membrane filters, including high-shear rate filters and equipment to prepare, characterize and modify membrane properties. Both liquid and gas phase separation can be investigated. The research group includes also a dedicated oxidation team that concentrates on investigating oxidation processes that can complement membrane technologies.



Led by Professor

Mika Mänttari

mika.manttari@lut.fi

+358 40 734 2192

lut.fi/en

FOCUS AREAS

Industrial and Environmental Applications

Separation and purification technologies in biorefining, water and wastewater treatment, mining, metallurgy (including battery industry), and food production.

Membrane Fouling and Performance

Understanding fouling phenomena and improving membrane efficiency.

Hybrid Processes

Combining membranes with oxidation, adsorption, crystallization, and biological processes for optimal solutions.

Material Development

Creating biopolymer-based membranes, enhancing antibacterial properties, tailoring membrane properties, and reusing end-of-life (EoL) membranes.

Industrial Streams

Treating acidic and alkaline streams, biomass extraction liquors, and novel solvents.

Wastewater Treatment

Creating innovative purification techniques to comply with EU regulations, targeting substances, such as pharmaceuticals, PFAS, and those contributing to antimicrobial resistance, developing treatment processes allowing the beneficial use of wastewater components.

APPLICATIONS

Fractionation processes in biorefining, solvents purification and reuse, process and wastewater purification and recirculation, fractionation of pulping liquors, separations of ions e.g. in mining, metallurgic and battery industry, gas separation.