

## Membrane Technology Engineering Institute

№	Project Name	Head of Project	Project start and end years	Volume (Amount)	Status Finished/Current	Grant Code
1	Wine Microfiltration (MF) and Water Ultrafiltration (UF) Flat Sheet Industrial Membrane Unit;	M. Kezherashvili	2022-2024	189000	Current	AR-22-1998
2	Household Spiral-Type Membrane Unit for Dead-End and Tangential Water Ultrafiltration	L. Kuparadze	2022-2024	189000	Current	AR-22-2048
3	"Reactives, reagents, laboratory and experimental consumables".	G.Bibileishvili	2022-2023	25000	Current	RIM-4-22-018

4	Expensive scientific instruments and equipment- Analytical instrument- Infrared Fourier Spectrometer.	G.Bibileishvili	2021-2022	123500	finished	RIM-2-21-123
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Abstract::

Wine Microfiltration (MF) and Water Ultrafiltration (UF) Flat Sheet Industrial Membrane Unit;

Outcomes of research:

- Developing a wine microfiltration production membrane unit (filtrate turbidity - 0.12-0.32 FTU, membrane type – flat sheet, filtering area - 10m<sup>2</sup>, membrane pore size - 0.1 μm, 0.45 μm, capacity - 250 l/h;)
- Developing a water ultrafiltration production membrane unit (filtrate turbidity - 0.02-0.05 FTU, membrane type – flat sheet, filtering area - 10m<sup>2</sup>, membrane pore size - 0.1 μm, capacity - 500 l/h;)
- Developing novel, innovative hybrid flow calculation algorithms and mathematical calculation models for wine microfiltration and water ultrafiltration separation processes;
- Developing a pressure cell of a new design;
- Developing a novel membrane apparatus/unit;

Household Spiral-Type Membrane Unit for Dead-End and Tangential Water Ultrafiltration

Outcomes of research:

- The project is to determine the applicability of a household spiral-type ultrafiltration membrane device with a filtration area of 0.1-0.5 m<sup>2</sup>, a membrane with a pore size of 0.05-0.1 μm and a capacity of 10-25l/h for water (filtrate turbidity 0.02-0.03 FTU) in laboratory conditions and production tests of additional devices.
- Developing novel, innovative hybrid flow calculation algorithms and calculation mathematical models for water ultrafiltration separation processes;
- Developing a pressure cell of a new design;
- Developing a novel membrane apparatus; Membrane Unit for Dead-End and Tangential Water Ultrafiltration.

### 3. Concrete result - - Recommendations

In the Engineering Institute of Membrane Technologies, equipping the material-technical base with reactivities, reagents, laboratory and experimental consumables is important and necessary for the implementation of planned activities for the experimental research and processing of new nanocomposite materials in order to create micro-, ultra- and nanofiltration membranes.

### 4. Concrete result - - Recommendations

The research tool - Infrared Fourier Spectrometer - performs identification, qualitative and quantitative analysis of organic, inorganic solid and liquid substances, materials.