

**Sustainable Water Management
Doctoral Programme (Water4All)**



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Title of the PhD Project	Revaluation of segregated domestic wastewater streams as a source for sustainability: The use of grey water as an alternative and renewable source of water
Acronym	GreyMBR
Research Fields of the Project	Environmental Engineering, Bioreactor Engineering, Membrane Production and Membrane Processes
Keywords	Grey water, membrane, drinking water, MBR
Host Institution, Department and Campus Location	Istanbul Technical University, Department of Environmental Engineering, ITU Ayazaga Campuss, Maslak, 34467 Istanbul
PhD Awarding Institution and Graduate Programme	Istanbul Technical University, Graduate School, PhD in Department of Environmental Engineering
Name and Affiliation of Main Supervisor	Prof. Dr. Vedat Uyak
Name and Affiliation of Co-Supervisors	Assoc. Prof. Dr. Mahmut Altınbaş
Research Environment and Infrastructure	Istanbul Technical University is an institution that plays a leading role in science, technology, arts, and sports. ITU aims to be the center of science, which connects the past to the present by producing projects for the future. The ITU Environmental Engineering Laboratories (https://cevmuhlab.itu.edu.tr) consist of 2400 square meters of management offices, 2300 square meters of research laboratories, and 350 square meters of student laboratories. The ITU Environmental Engineering department has 17 different laboratory infrastructures, including Molecular Biology Laboratory, Instrumental Analysis Laboratory, and Physical Processes Laboratory.

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<p>Scientific Context of the Project</p>	<p>The term membrane processes refer to a group of effective and reliable technologies widely used in the treatment of water. Membrane filters are used in these processes to remove unwanted particles, microorganisms, and chemicals from water. By allowing water to pass through, membranes ensure that various contaminants are left behind. By using membrane filters, water can be effectively purified of microorganisms, viruses, bacteria, and a variety of chemicals. Many applications can benefit from membrane processes, including clean drinking water provision, optimizing water use in industrial production processes, wastewater treatment, and seawater desalination. Water resource management can be improved through the use of this technology.</p> <p>Gray water is a resource already present in most residential and commercial properties. Due to its low cost and local availability, gray water is considered a low-cost, local water supply source. The use of gray water after it has been treated can reduce the environmental footprint by reducing the amount of water consumed. It is possible to increase the sustainability of water resources by reducing the demand for clean drinking water. Using innovative membrane processes, this study will focus on membrane production and membrane bioreactor operation to purify gray water to drinking water quality.</p>
<p>Brief Workplan</p>	<p>Development of novel membrane specific for grey water, operation of membrane bioreactor, ecotoxicological investigation of treated grey water, performing water quality tests under national and local health standards.</p>
<p>Innovative Aspects of the Project</p>	<p>A novel membrane will be produced, and a membrane bioreactor will be operated. To obtain a cost-effective membrane process system, a costly and complex graywater treatment process will be organized and examined taking into account ecotoxicological and regulatory requirements.</p>
<p>Training Opportunities of the Project</p>	<p>The researcher will be trained in the areas of membrane production, wastewater treatment, ecotoxicological analysis, and membrane characterization. There will be an opportunity for the participation of the researcher in water quality tests.</p>
<p>Interdisciplinary Aspects</p>	<p>This highly multidisciplinary project involves environmental engineering (wastewater treatment), materials science (membrane production), and bioreactor engineering (bioreactor management techniques).</p>

Intersectoral Mobility <input type="checkbox"/> Short Visit <input type="checkbox"/> Secondment	Host: RS Research Context of Mobility: Training in membrane production
Intersectoral Mobility <input type="checkbox"/> Short Visit <input type="checkbox"/> Secondment	TBD
International Academic Secondment	TBD

Main Supervisor										
Brief CV	<p>Prof. Dr. Vedat UYAK</p> <p>E-mail: uyakv@itu.edu.tr</p> <p>Academic Degrees</p> <table><tr><td>Ph.D.</td><td>Environmental Engineering, Istanbul Technical University, Türkiye</td><td>2002</td></tr><tr><td>M.Sc.</td><td>Environmental Engineering, University of Iowa, USA</td><td>1997</td></tr><tr><td>B.Sc.</td><td>Environmental Engineering, Cumhuriyet University, Türkiye</td><td>1989</td></tr></table> <p>Professional Networks</p> <p>Google Scholar: https://scholar.google.com/citations?user=8oWyPXsAAAAJ&hl=tr&oi=ao</p> <p>ResearchGate: https://www.researchgate.net/profile/Vedat-Uyak</p>	Ph.D.	Environmental Engineering, Istanbul Technical University, Türkiye	2002	M.Sc.	Environmental Engineering, University of Iowa, USA	1997	B.Sc.	Environmental Engineering, Cumhuriyet University, Türkiye	1989
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Brief CV	<p>Assoc. Prof. Dr. Mahmut ALTINBAŞ</p> <p>E-mail: altinbasm1@itu.edu.tr</p> <p>Academic Degrees</p> <table><tr><td>Ph.D.</td><td>Environmental Engineering, Istanbul Technical University, Türkiye</td><td>2007</td></tr><tr><td>M.Sc.</td><td>Environmental Engineering, Istanbul Technical University, Türkiye</td><td>2000</td></tr><tr><td>B.Sc.</td><td>Environmental Engineering, Istanbul Technical University, Türkiye</td><td>1997</td></tr></table> <p>Professional Networks</p> <p>Google Scholar: https://scholar.google.com/citations?user=xqbpVMYAAAAJ&hl=en&oi=ao</p> <p>ResearchGate: https://www.researchgate.net/profile/Mahmut-Altinbas</p> <p>Scopus: https://www.scopus.com/authid/detail.uri?authorId=23003289800</p> <p>ORCID: https://orcid.org/0000-0003-3946-741X</p>	Ph.D.	Environmental Engineering, Istanbul Technical University, Türkiye	2007	M.Sc.	Environmental Engineering, Istanbul Technical University, Türkiye	2000	B.Sc.	Environmental Engineering, Istanbul Technical University, Türkiye	1997
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