

Research Labs (9&21)

RESEARCH LABORATORY- 9&21

Separation Technologies for Water/Wastewater Treatment

Supervisor:

Prof. Dr. Nalan Kabay

Researchers

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Description

Research on separation technologies for treatment/recovery of water/wastewater and novel materials (membrane processes (RO, NF, ED, EDI, BMED, MBR, UF), ion exchange, adsorption, membrane hybrid methods, solvent impregnated resins, polymeric ion exchange resins, inorganic materials), production of renewable energy (biogas and biodizel) from plant wastes and vegetable oils.

Equipments

Atomik Absorption Spectrometer (Shimadzu)
Ion Chromatography equipments (Shimadzu)
UV- Visible spektrophotometer (Jasco, Shimadzu)
Electrodialysis equipments (Tokuyama TS-1-10, MEGA, PC-Cell)
Elektrodeionization systems and rectifiers (Electrocell)
Particle sizer (Malvern)
Colorimeters (Hach Lange/Merck), turbidimeter, ion meter
Sepa CF-II membrane test system and its pump
Amicon membrane test system
Seeded microfiltration system and its stirrer
Drying Ovens, Vacuum Oven, Furnace
Water baths, shakers, sand bath
Analytical balances
Magnetic stirrers, mechanical stirrer
Ultrasonic bath, Various pumps
Fraction collectors
Water deionization system, Ultrapure water system (Millipore)
Conductometers, pH meters
Computers

Current Research Projects

1. Reuse of Recovered Wastewater Treated by Membrane Separation Methods in Process Water Production, Cultivation of Energy Plant and Landscape Activities
2. Lithium and Boron Recovery from Geothermal Water Using the Hybrid Process Combining Adsorption and Electrodialysis
3. Utilization of ion exchange resins as catalysts for biodizel production
4. Optimization of pilot-scale MBR system for wastewater treatment

Completed research projects

1. Innovative Materials and Methods for Water Treatment
2. Application of Membrane Technologies for Water Reclamation and Whey Desalination in Food Industry
3. Rehabilitation Study in Membrane Bioreactor (MBR) Treatment System at ITOB-OSB and Growing Energy Plants in Wastewater for Biogas Production
4. Application of membrane hybrid method for utilization of seawater as alternative water source in Izmir and investigation of influence of brine on marine environment.
5. Application of Membrane Bioreactor (MBR) Technology for Treatment of Municipal and Industrial Wastewater and Investigation of Quality of Treated Wastewater.
6. Investigation on Influence of Pre-treatment Conditions on Desalination Performances of RO and NF Membranes
7. Application of RO Process for Reuse of Treated Wastewater at Industrial Zone and Investigation of Product Water Quality
8. Investigation of Treatment Methods for Raw Water Used for Bread Production and Product water quality
9. Application of NF/RO Methods for Reuse of Wastewater Treated with MBR Method.
10. Removal of Endocrine Disrupting Compounds (EDCs) by Membrane Separation Methods.
11. Removal and Recovery of Boron from Waters by Membrane Filtration, Ion Exchange and Sorption-Membrane Hybrid Process for Irrigation
12. Removal of phenol and bisphenol A from Water by RO and NF Membranes
13. Development of an Innovative Membrane Treatment Process for Elimination of Toxic Organic Species from Water
14. Removal of traces amounts of endocrine disruptors from water by nanostructured polymeric materials
15. Removal of Boron from Geothermal Water by Cross flow flat sheet RO membrane system
16. Removal of Boron from Seawater RO permeate
17. Production of and Potable and Drinking Water from Seawater by RO Process
18. Development of an innovative treatment process for geothermal wastewater
19. Development of Separation Process for Boron Removal from Wastewater
20. Development of the sorption-membrane "green technology" to utilize boron from waters and wastewater
21. Study of the Adsorption-Membrane Filtration (AMF) Hybrid Process for Removal of Boron from Seawater
22. Design and Production of Novel Solvent Resistant Nanofiltration Membranes
23. A study on Li, B and As levels in geothermal waters of Aegean Region and selective removal of these elements from geothermal water
24. Removal of Toxic Impurities from Industrial Wastewater and Drinking Water by Electrodionization Method
25. Removal of Boron from Seawater by Ion Exchange and Membrane Processes
26. Investigation on Separation of Cations and Anions of different valences from a mixture by ED Method
27. Separation of Various Ions from Water by ED Method
28. Separation of Chromate from Aqueous Solution by Aliquat 336 Impregnated Resins With Improved Physical Stability
29. A study on Removal of Cd from Phosphoric Acid by Polymeric Adsorbents Functionalized with Cyanex 302
30. Removal of Heavy Metals from Wastewater by Solvent Impregnated Resins
31. Stabilization of Solvent Impregnated Resins for Removal of Heavy Metals
32. Removal and Recovery of Boron from Geothermal Wastewater by Ion Exchange Method
33. Investigation on Reuse of Treated Wastewater by ED
34. Removal of Cr ions in industrial wastewater by ion exchange method
35. Removal and Recovery of Boron from Wastewater of Kizildere Geothermal Power Plant by Ion Exchange Technology
36. Membrane Recovery of Metal Pollutants from the Wastewaters of the Fertilizer Industry
37. A study on application of modified polymeric amidoxime resins for uranium recovery from seawater

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