

CURRICULUM VITAE: BURAK DEMIREL

Faculty Member

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ACADEMIC QUALIFICATIONS

PhD (1996-2003): Institute of Environmental Sciences, Boğaziçi University, Istanbul, Turkey

Thesis: Acidogenesis in two-phase anaerobic treatment of dairy wastewater

MSc (1994-96): Institute of Environmental Sciences, Boğaziçi University, Istanbul, Turkey

Thesis: Removal of heavy metals by ferritisation

BSc (1990-1994): Istanbul Technical University, Faculty of Chemical and Metallurgical Engineering, Department of Metallurgical Engineering, Istanbul, Turkey

EMPLOYMENT AND RESPONSIBILITIES

- 2011- : Associate Professor - Boğaziçi University, Institute of Environmental Sciences, Istanbul, Turkey
- 2009-2011: Assistant Professor - Boğaziçi University, Institute of Environmental Sciences, Istanbul, Turkey
- 2008-2009: Project Manager - Renewable Energy Networks between Turkish and European Universities (RENET), EU Project - Boğaziçi University, Institute of Environmental Sciences, Istanbul, Turkey
- 2005-2008: DAAD (German Academic Exchange Service) Post-Doc, Hamburg University of Applied Sciences (HAW Hamburg), Faculty of Life Sciences, Hamburg, Germany
- 1996-2005: Graduate Research and Teaching Assistant - Boğaziçi University, Institute of Environmental Sciences, Istanbul, Turkey

OTHER PROFESSIONAL ACTIVITIES

- Member, IWA (International Water Association) (2008-)

RESEARCH INTERESTS

- Biogas Engineering
- Renewable Energy Sources
- Anaerobic Biotechnology for Wastewater and Waste Treatment
- Solid Waste Management

TEACHING

- Biogas Engineering
- Global Climate Change
- On Site Training
- Renewable and Non-renewable Resources
- Energy from Biomass

LANGUAGES

- Fluent in English
- Fluent in German

HONORS AND AWARDS

- Energy Globe National Award 2012, Renewable Energy Networks between Turkish and European Universities (RENET) Project, Boğaziçi University
- DAAD (Deutscher Akademischer Austausch Dienst-German Academic Exchange Service) Post-doctoral Research Fellowship, April 2005
- TÜBİTAK (The Scientific & Research Council of Turkey) NATO B-1 Post-doctoral Research Fellowship, December 2004

EDITORIAL WORK

- Guest Editor for Special Issue; *Journal of Hazardous Materials*, Special Section: Advanced Treatment Options for the Removal of Environmental Contaminants, Volume 263, Part 2, Pages 267-792 (15 December 2013)
- Reviewer for *Bioresource Technology*; *Chemosphere*; *Energy Sources Part A: Recovery, Utilization and Environmental Effects*; *Water Science & Technology*; *Waste Management & Research*; *Water Research*; *Biochemical Engineering Journal*; *International Journal of Global Warming*; *Biomass & Bioenergy*; *Water Air & Soil Pollution*; *BioEnergy Research*; *Energy Conversion & Management*; *Waste Management*; *Environmental Technology*

PROJECTS

- Boğaziçi University Research Fund: "Effect of nanoparticles (NPs) on anaerobic digestion of biomass", October 2013- (Ongoing), Project Coordinator
- TUBITAK (The Scientific & Research Council of Turkey) 1001: "The Behaviour of Nanoparticles in Conventional and Bioreactor Landfills", May 2013- (Ongoing), Project Coordinator
- TUBITAK (The Scientific & Research Council of Turkey) 1001: "Bioethanol production from agricultural wastes for waste minimization and carbon budget analysis", 2011- (Ongoing), Researcher
- Boğaziçi University Research Fund: " Impact of trace metal addition on biogas yield from maize silage", 2012- 2013, Project Coordinator
- Boğaziçi University Research Fund: " Evaluation of renewable energy production through co-digestion of poultry wastes and agricultural residues", 2010 – 2011, Project Coordinator
- Boğaziçi University Research Fund: "Production of biogas as a source of renewable energy from poultry wastes", 2010 – 2011, Project Coordinator
- EU Grant Project: "Renewable Energy Networks between Turkish and European Universities (RENET) ", 2008 – 2009, Project Manager

SUBMISSIONS TO PEER REVIEWED JOURNALS

- Recovery of methane from tannery sludge: the impact of I/S ratio and solids content, Çağrı Akyol, **Burak Demirel** and Turgut T. Onay, *Journal of Environmental Engineering* (December 2013)

PEER REVIEWED JOURNAL PUBLICATIONS

- Major pathway of methane formation from energy crops in agricultural biogas digesters, **Burak Demirel**, *Critical Reviews in Environmental Science and Technology*, Vol. **44**, 199-222, 2014.
- Determination of biogas generation potential as a renewable energy source from supermarket wastes, Gizem Alkanok, **Burak Demirel** and Turgut T. Onay, *Waste Management*, Vol. **34**, 134-140, 2014.
- Recovery of methane from ice-cream wastewater and ice-cream production residue through anaerobic co-digestion, **Burak Demirel**, Murat Örok, Elif Hot, Selin Erkişi, Metin Albükek, and Turgut T. Onay, *Environmental Technology*, Vol. **34**, 13-14, 2099-2104, 2013.
- Ammonia inhibition in anaerobic digestion: a review, Orhan Yenigün and **Burak Demirel**, *Process Biochemistry*, Vol. **48**, 901-9011, 2013.
- Evaluation of heavy metal content in digestate from batch anaerobic co-digestion of sunflower hulls and poultry manure, **B. Demirel**, Nefise Pinar Göl and Turgut T. Onay, *Journal of Material Cycles and Waste Management*, Vol. **15**, 242-246, 2013.
- Trace elements requirements of biogas digesters during biological conversion of renewable biomass to methane, **B. Demirel** and Paul Scherer, *Biomass & Bioenergy*, Vol. **35**, 992-998, 2011.

- Impact of food waste fraction in MSW on sorption of heavy metals, Turgut T. Onay, N. Coptay, **B. Demirel** and A. Bacioglu, *Waste Management & Research*, Vol. **28**, 936-943, 2010.
- Production of renewable methane and hydrogen from biomass through conventional and high-rate anaerobic digestion processes. **B. Demirel**, P.Scherer, O. Yenigun and Turgut T. Onay, *Critical Reviews in Environmental Science and Technology*, Vol. **40**, 2, 116-146, 2010.
- Bio-methanization of energy crops through mono-digestion for continuous production of renewable biogas. **B. Demirel** and Paul Scherer, *Renewable Energy*, Vol. **34**, 2490-2495, 2009.
- Laboratory investigations on continuous bio-methanization of energy crops as mono-substrate without supplementation. **B. Demirel**, *Biomass & Bioenergy*, Vol. **33**, 988-993, 2009.
- Long term fermentation studies about the nutritional requirements for biogasification of fodder beet silage as mono-substrate. P. Scherer, L. Neumann, **B. Demirel**, O. Schmidt and M. Unbehauen, *Biomass & Bioenergy*, Vol. **33**, 873-881, 2009.
- The performance of an anaerobic biogas digester running on sugar beet silage as mono-substrate and the behaviour of the microbial community. **B. Demirel**, S. Ergun, L. Neumann and P. Scherer, *Biosystems Engineering*, Vol. **102**, 444-452, 2009.
- Application of a fuzzy logic control system for continuous anaerobic digestion of low buffered, acidic energy crops as mono-substrate. P. Scherer, K. Lehmann, O. Schmidt and **B. Demirel**, *Biotechnology & Bioengineering*, Vol. **102**, 3, 736-748, 2009.
- Microbial community dynamics of a continuous mesophilic anaerobic biogas digester fed with sugar beet silage as the single substrate without manure addition. **B. Demirel**, L. Neumann and P.Scherer, *Engineering in Life Sciences*, Vol. **8**, 4, 390-398, 2008.
- The roles of acetotrophic and hydrogenotrophic methanogens during anaerobic conversion of biomass to methane: A review. **B. Demirel** and P.Scherer, *Reviews in Environmental Science and Bio/technology*, Vol. **7**, 173-190, 2008.
- Production of methane from sugar beet silage without manure addition by a single-stage anaerobic digestion process. **B. Demirel** and P.Scherer, *Biomass & Bioenergy*, Vol. **32**, 203-209, 2008.
- Changes in the microbial ecology in an anaerobic acidogenic reactor. **B. Demirel** and O. Yenigün, *Bioresource Technology*, Vol. **97**, 10, 1201-1208, 2006.
- Anaerobic treatment of dairy wastewaters: a review. **B. Demirel**, O. Yenigun and Turgut T. Onay, *Process Biochemistry*, Vol. **40**, 2583-2595, 2005.
- Anaerobic acidogenesis of dairy wastewater: the effects of variations in hydraulic retention time with no pH control. **B. Demirel** and O. Yenigun, *Journal of Chemical Technology and Biotechnology*, Vol. **79**, 755-760, 2004.
- The effects of change in volatile fatty acid (VFA) composition on methanogenic upflow filter reactor (UFAF) performance. **B. Demirel** and O. Yenigun, *Environmental Technology*, Vol. **23**, pp 1179-1187, 2002.
- Two-phase anaerobic digestion processes: a review. **B. Demirel** and O. Yenigun, *Journal of Chemical Technology and Biotechnology*, Vol. **77**, 743-755, 2002.

- Removal of Cu, Ni and Zn from wastewaters by the ferrite process. **B. Demirel**, O. Yenigun and M. Bekbolet, *Environmental Technology*, Vol. **20**, pp 963-970, 1999.

CONFERENCE PROCEEDINGS

- Recovery of methane from supermarket wastes, G. Alkanok, **B. Demirel** and T.T. Onay, Submitted to the Biogas Science 2014 International Conference on Anaerobic Digestion, Vienna, Austria, October 26-30, 2014.
- The impact of trace metals on production of biogas from maize silage, B. Evranos and **B. Demirel**, Accepted for poster presentation at the 22nd European Biomass Conference & Exhibition, Hamburg, Germany, June 23-26, 2014.
- Impact of changes in substrate composition on the microbial ecology of a biogas digester fed with energy crop using FISH technique, L. Neumann, **B. Demirel** and P. Scherer, 13. World Conference on Anaerobic Digestion, Santiago De Compostela, Spain, June 25-28, 2013.
- Evaluation of biogas production potential from anaerobic co-digestion of ice-cream production residues and wastewater, S. Erkisi, E. Hot, M. Orok, **B. Demirel** and T. Onay, 13. World Conference on Anaerobic Digestion, Santiago De Compostela, Spain, June 25-28, 2013.
- Impact of rice husk as litter material on biogas generation from chicken manure, Gülnaz Pola, Turgut T. Onay and **Burak Demirel**, International Symposium on Anaerobic Digestion of Solid Waste and Energy Crops, Austria, Vienna, August 28-September 1, 2011.
- Mono digestion of sugar beet silage by fuzzy logic control, **Burak Demirel** and Paul Scherer, International Symposium on Anaerobic Digestion of Solid Waste and Energy Crops, Austria, Vienna, August 28-September 1, 2011.
- Production of biogas as a source of renewable energy through co-digestion of agricultural residues with poultry manure, N.Pınar Göl, **B. Demirel** and Turgut T. Onay, Global Conference on Global Warming (GCGW-11), Lisbon, Portugal, July 11-14, 2011.
- Production of biogas as a source of renewable energy from animal wastes in Turkey, **B. Demirel**, ISWA World Congress 2010, Hamburg, Germany, November 15-18, 2010.
- Renewable energy networks between Turkish and European Universities (RENET), **B. Demirel**, O. Yenigün, Turgut T. Global Conference on Global Warming (GCGW-09), Istanbul, Turkey, July 6-9, 2009.
- Biogas potential and use in Turkey, **B. Demirel**, 17th European Biomass Conference & Exhibition From Research to Industry and Market, Hamburg, Germany, June 29-July 3, 2009.
- New microbiological insights during fuzzy logics controlled anaerobic digestion of fodder beet silage reveal consequences for the operation of biogas plants. Scherer, P, Krakat, N, Satke, K, Westphal, A, Neumann, L, Schmidt, O, **Demirel, B**, Scharfenberg, N, Rösner, C, Unbehauen, M. Bornimer Agrartechnische Berichte, Heft 68 (ISSN 0947-7314), 79-95, 2009.
- Investigation by fluorescence in situ hybridization (FISH) technique of the influence of reactor parameters on the biogas digester microbial community. L. Neumann, **B. Demirel** and P. Scherer. The 3rd Congress of European Microbiologists (FEMS 2009). Gothenburg, Sweden, June 28-July 2, 2009.

- Changes in microbial population of a biogas digester depending on the process parameters as investigated by fluorescence in situ hybridization. L. Neumann, **B. Demirel** and P. Scherer. BAGECO 10 Conference, Uppsala, Sweden, June 15-19, 2009.
- The application of a fuzzy logic control (FLC) strategy for production of renewable energy from biomass through anaerobic digestion process. P.Scherer and **B. Demirel**. 2nd International Symposium on Energy from Biomass and Waste Venice 2008, Venice, Italy, November 17-20, 2008.
- Some experiments with a low buffered and acidic biomass to prove the feasibility of a fuzzy logic controller for anaerobic digestion. P. Scherer, K. Lehmann, O. Schmidt and **B. Demirel**. 2nd International Symposium on Energy from Biomass and Waste Venice 2008, Venice, Italy, November 17-20, 2008.
- Fermentor study over a period of 300 days about the nutritional requirement for anaerobic digestion of fodder beet silage under high throughput conditions, L. Neumann, O. Schmidt, **B. Demirel**, M. Unbehauen and P.Scherer. 5th International Symposium of Anaerobic Digestion of Solid Waste & Energy Crops, Hammamet, Tunisia, May 25-28, 2008.
- The microbial ecology of a mesophilic anaerobic biogas digester operating with biomass for continuous production of biogas as a renewable energy source, **B.Demirel**, L. Neumann and P. Scherer. 5th International Symposium of Anaerobic Digestion of Solid Waste & Energy Crops, Hammamet, Tunisia, May 25-28, 2008.
- Continuous production of biogas from biomass: the effects of nitrogen and buffering capacity on anaerobic digestion of sugar beet silage, **B.Demirel**, Turgut T. Onay and P. Scherer. 11th Anaerobic Digestion World Congress, Brisbane, Australia, September 23-27, 2007.
- Anaerobic digestion of sugar beet silage for renewable energy, **B. Demirel** and P. Scherer. Workshop on Anaerobic Digestion in Mountain area (and isolated rural zones), Chambery, France, June 5-7, 2007.
- Microbial population dynamics during anaerobic digestion of sugar beet silage for renewable energy production, **B. Demirel**, L. Neumann and P. Scherer. Annual Conference of the Association for General and Applied Microbiology, Osnabrück, Germany, April 1-4, 2007.
- An overview of water supply and distribution systems in the metropolitan city of Istanbul, O. Yenigün ve **B. Demirel**. Water Supply in Emergency Situations, Y.Sharan et al (eds.), Springer, 43-48, 2007.
- Description of a bioprocess to convert renewable biomass into methane, **B. Demirel** and P. Scherer. Third International Congress on Biocatalysis (BIOCAT2006), Ralf Grote and Garabed Antranikian (Eds.), pp:166 (Poster presentation), Hamburg, Germany, September 3-7, 2006.
- The behaviour of the microbial ecology in an anaerobic acidogenic reactor during acidogenesis of dairy wastewater, **B. Demirel** and O. Yenigun. 1st IWA-ASPIRE 2005 Conference & Exhibition, Singapore, July 10-15, 2005.
- Acid reactor performance assessment in two-phase anaerobic treatment of dairy wastewater, **B. Demirel** and O. Yenigun. 10th World Congress-Anaerobic Digestion, Montreal, Canada, August 29th - September 2nd, 2004.

- Acidogenesis in anaerobic treatment of dairy wastewater, **B. Demirel** and O. Yenigun. Asian Waterqual2003-IWA Asia-Pacific Regional Conference, Bangkok, Thailand, October 19-23, 2003.
- Influence of volatile fatty acid composition on methanogenesis, **B. Demirel** and O. Yenigun. *IWA 2nd World Water Congress*, Berlin, Germany, October 15-19, 2001.

STUDENTS CURRENTLY SUPERVISED

- MSc Student Beyza Evranos, 'The Impact of Metal Addition on Biogas Production from Maize Silage'