



Curriculum Vitae

Dr. Petros Gikas **Associate Professor**

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In brief

1985-1990: Bachelors Degree (5 years degree), Chemical Engineering, National Technical University of Athens (NTUA), Athens, Greece

1991-1996: PhD, Imperial College, Chemical Engineering, London, UK.. *Subject: Wastewater Treatment*

1996-1997: Military service in Greece (*As Chemical Engineer*)

1997-2002: Processes and Operations Manager, Delmar Technology S.A., Thessaloniki, Greece. *Tasks: Development of wastewater treatment processes, Project Manager*

2002-2009: Ministry of Environmental Planning and Public Works. *Tasks: Supervision of the design and construction of the Wastewater Treatment Plant of Athens on Psyttalia Island (capacity 1,000,000 m³/d, budget 240 million Euros) and the relative Thermal Plant for Sludge Drying (capacity 1400 ton/d (wet basis), budget 36 million Euros)*

2006-2007: Visiting Researcher at the University of California, Davis, USA (*collaboration on research issues on wastewater and solid waste management*)

2009-2015: Assistant Professor, School of Environmental Engineering, Technical University of Crete, Director of the “Design of Environmental Processes Laboratory”

2010-today: Special advisor to the Hellenic Special Secretariat for Water, for issues related with the implementation of the Water Framework Directive 2000/60EC, and representative of Greece to the European Commission Working Group “Chemicals”, for the establishment of Environmental Quality Standards (EQS)

2014-today: Collaborating Academic Staff of the Hellenic Open University, teaching the postgraduate course: Wastewater Management

2015-today: Associate Professor, School of Environmental Engineering, Technical University of Crete, Director of the “Design of Environmental Processes Laboratory”

Member of Editorial Boards: Journal of Environmental Management_Associate Editor (Elsevier), British Journal of Environment and Climate Change (Science Domain International), Biomed Research International (Hindawi) and Heliyon (Elsevier)

Guest Editor: Biomed International (*Subject: Toxicity of Environmental Contaminants*), Journal of Environmental Management (*Subjects: (a) Waste and Wastewater Management (lead), (b) Sustainable Waste and Wastewater Management*), Applied and Environmental Soil Science (*Subject: Soil Pollution Prevention and Remediation*)

Detailed CV

Dr. Petros Gikas is **Associate Professor** at the **School of Environmental Engineering, Technical University of Crete, Greece**, and **director of the “Design of Environmental Processes Laboratory”**. His research interests are focused on **municipal, industrial and agricultural waste and wastewater management**. He is specifically active in the design of novel wastewater treatment processes with emphasis in low cost – low energy treatment processes and on water reclamation and reuse applications. He is also working on **energy recovery from biosolids and municipal solid waste, utilizing thermal or biological processes**. He is also engaged in research for the development of algorithms for **integrated water resources management** (with emphasis on water reuse). Since 2005 he teaches the course **“Design of Environmental Processes and Environmental Impact Assessment”** of the 8th and 9th semester at the School of Environmental Engineering, Technical University of Crete. He also teaches the postgraduate courses **“Advanced Wastewater Treatment Technologies”**, **“Biorefineries-Waste Valorization”** and **“Environmental Impact Assessment”**. During the academic year 2006-2007 he visited the **University of California (UC), Davis, USA**, where he was engaged in environmental research at the Departments of Civil and Environmental Engineering, and Biological and Agricultural Engineering. He also taught at the Department of Biological and Agricultural Engineering of UC Davis the postgraduate course “Management and Treatment of Wastewater”. Dr. Gikas has scientific collaboration with the Department of Environmental Engineering **Fatih University, Turkey**, Department of Chemical Engineering **University College, London, UK**, Departments of Civil and Environmental Engineering, and Biological and Agricultural Engineering **UC Davis, California**, Department of Earth and Environmental Engineering, **Southern Methodists University, Texas**, Department of Civil and Environmental Engineering **Columbia University, New York**, Department of Environmental Engineering, **Polytechnic of Bari, Italy** with the Swiss Federal Institute for Environmental Science and Technology (**EAWAG, Zurich, Switzerland**) and with the Technological Center of Energy and the Environment (**CETENMA, Murcia, Spain**), with the **University of Botswana, Gaborone**, Department of Civil Engineering, with the **Kwazulu-Natal University, Durban, South Africa**, Department of Civil Engineering, with the **National Polytechnic University of Armenia, Erevan**, Faculty of Chemical Technologies and Environmental Engineering, with the **National University of Laos, Vientiane**, Faculty of Engineering and with **Melinda and Bill Gates Foundation, Seattle, USA**. During his academic carrier, Dr. Gikas has supervised a number of projects in collaboration with the industry and with public enterprises.

During his academic carrier, Dr. Gikas has served, as research consultant, in a number of projects, including, the preliminary studies for **water reclamation and reuse for Santorini, Paros and Skiathos islands**, the **water preservation study for Procter and Gamble S.A.**, the development of **Anammox process for municipal wastewater treatment for M2 Renewables, Inc., California**, as well as a study for the improvement of the **energy efficiency of the water supply and sewerage pumping stations of the Municipality of Rethymno**. Also, he elaborated the **Water Management Plan for the Aegean Islands**, focusing on point pollution sources. He is currently working on a study for the **exploitation of electric energy from the largest landfill** in Crete, in Heraklion. He is currently working on the development of a **novel positive energy wastewater treatment process**, through the **LIFE program**, with title **“New Concept for Energy Self-Sustainable Wastewater Treatment Process and Biosolids Management”**, where he serves as **Project Coordinator**. Recently he is engaged in a National research program, on **“Bioconversion of CO₂ into High-added Value Bioproducts through Sustainable Microalgae Cultivation Processes”**.

Dr. Gikas currently serves a special advisor for the **Hellenic Central Water Agency**, for issues related with the implementation of the **Water Framework Directive 2000/60EC**, and represents Greece in the **European Commission Working Group “Chemicals”**, for Environmental Quality Standards. He is also advisor to the **Greek-German Assembly (Deutsch-Griechische Versammlung-DGV)**, for waste and wastewater management issues. Between April-November 2013 he served as **member of the board of directors for the Centre for Renewable Energy Sources and Saving (CRES)**.

Between 2002-2009, Dr. Gikas was employed by the **Ministry of Environmental Planning and Public Works**, supervising the construction of wastewater treatment plant of Athens on Psyttalia Island (capacity: 1,000,000 m³/d, budget 240 million Euros) and the plant for thermal processing of municipal sludge management (capacity 1400 ton/d (wet basis), budget 36 million Euros), and as staff of the **Hellenic Central Water Agency**. During the above period he represented Greece in the WG5 Special Committee of European Union, which was responsible for the elimination of toxic substances from surface and underground waters,

in relation with the **Water Framework Directive 2000/60EC**. In 2008, Dr. Gikas **drafted the first legislation on water reuse criteria for Greece** (FEK B2089/9.10.2008). He was also member of the committee of the Ministry of Environmental Planning and Public Works for the revision of discharge limits to the **Asopos basin**, and for the remediation of the grater Asopos region. In 2007, he worked on a research study ordered by the **Integrated Waste Management Board of the State of California**, on the potential for biogas production from municipal solid waste.

Dr. Gikas studied **Chemical Engineering at the Technical University of Athens**. His bachelor thesis was on the “Production of Proteinase from Genetically Modified Cells *Lactobaccilus plantarum*”. He did his PhD at the **Department of Chemical Engineering, Imperial College, London, UK**, with title “The Influence of Biomass Activity on the Performance of Immobilized Cell Bioreactors”. During his postgraduate studies he received the “Eugenides Foundation” grant, a grant from the British “Science and Engineering Research Council” and two grants from the European Union (“BRIDGE” and “Human Capital and Mobility” programs). He also received two grants for the presentation of his work in international conferences (from the “Society of Chemical Industry, UK” and from the “Institution of Chemical Engineering, UK”). After he got his PhD, he worked in Imperial College for the scale up of a College's patent on the remediation of toxic wastewaters using membrane technologies and microbial degradation. This last work awarded the “Smart Award” of the British Ministry of Research and Technology.

Between 1997-2002, Dr. Gikas worked as **Processes and Operations Manager** of “Delmar Technology S.A.”, a company specializing in industrial wastewater treatment. Among other tasks, he was responsible for the **scaling up** of a patented process for chemical treatment of industrial wastewaters. During his occupation to the above company, he supervised industrial and research projects in more than 10 countries with total budget over one million Euros.

Dr. Gikas is the author of more than 50 scientific articles, and he has presented his research findings in more than 100 conferences. Dr. Gikas is serving as reviewer in more than 30 scientific journals. Dr. Gikas serves as **associate editor** for the “**Journal of Environmental Management**”, an ISI journal published by Elsevier, with impact factor of 2.73, member of the **editorial boards** of the “**British Journal of Environment and Climate Chang**” (Science Domain International), the “**Journal of Biomedicine and Biotechnology**” (Hindawi) and “**Heliyon**” (Elsevier), a new multidisciplinary journal by Elsevier. Moreover, he has participated in the edition of a number of Special Issues in scientific journals: Biomed International (Subject: Toxicity of Environmental Contaminants), Journal of Environmental Management (Subjects: (a) Waste and Wastewater Management (lead), (b) Sustainable Waste and Wastewater Management), Applied and Environmental Soil Science (Subject: Soil Pollution Prevention and Remediation).

Between 2010-2013, Dr. Gikas was an **elected member of council of Technical Chamber of Western Crete**, Greece, and vice member of the steering committee of the above council, since 2010. In 2012, Dr. Gikas was **elected as head of the union committee of academic staff of the Technical University of Crete**.

Selected Publications in Scientific Journals

- S. S. Şengor, **P. Gikas** and J. G. Moberly, 2018, Single and Joint Effects of Zn and Cu to ATP Pool and Microbial Recovery in Continuous Growth Systems, Journal of Chemical Technology and Biotechnology, (*In press*).
- P. Gikas**, B. Zhu, N. -I. Batistatos and R. Zhang, 2018 “Evaluation of the Rotary Drum Reactor Process as Pretreatment Technology of Municipal Solid Waste for Thermophilic Anaerobic Digestion and Biogas Production”, Journal of Environmental Management, Vol.:216, Pp.: 96-104.
- P. Gikas**, E. Ranieri, D. Sougioultzis, M. Farazaki and G. Tchobanoglous, 2017, “Alternative collection systems for decentralized wastewater management: An overview and case study of the vacuum collection system in Eretria town, Greece”, Water Practice and Technology, Vol.:12, Iss.: 3, Pp.: 604-618.
- P. Gikas**, 2016, “Towards Energy Positive Wastewater Treatment Plants”, Journal of Environmental Management, Vol.: 203, Iss.: 2, Pp.: 621-629.
- P. Gikas**, 2016, “Ultra High Temperature Gasification of Municipal Wastewater Primary Biosolids in a Rotary Kiln Reactor for the Production of Synthesis Gas”, Journal of Environmental Management, doi:10.1016/j.jenvman.2016.02.043, (*In press*).
- A. Emdadi, **P. Gikas**, M. Farazaki and Y. Emami, 2016, “Salinity Gradient Energy Potential at the Hyper Saline Urmia Lake - Zarrinehrud River System in Iran”, Renewable Energy, **86**, 154-162.

- S. Wang, L. Peng, Y. Jiang, **P. Gikas**, B. Zhu and H. Su, 2016, "Evaluation of a Novel Split-Feeding Anaerobic/Oxic Baffled Reactor (A/OBR) for Foodwaste Anaerobic Digestate: Performance, Modeling and Bacterial Community", *Scientific Reports*, **6**, 34640, doi: 10.1038/srep34640 (p 1-13).
- S. Liu, F. Konstantopoulou, L.G. Papageorgiou and **P. Gikas**, 2015, "Optimal planning of water and wastewater management infrastructure for insular areas: The role of water reuse", *Water Science and Technology: Water Supply*, **15**(4), 701-708.
- E. Ranieri, A. Gorgoglione, A. Pertella, V. Petruzzelli and **P. Gikas**, 2015, "Benzene removal in Horizontal Subsurface Flow Constructed Wetlands treatment", *International Journal of Applied Engineering Research*, **10**(6), 14603-14614.
- P. Gikas** and T. Tsoutsos, 2015, "Near Zero Energy Wastewater Treatment Plants for the Greek Islands", *Desalination and Water Treatment*, **53**(12), 3328-3324.
- A.N. Angelakis and **P. Gikas**, 2014, "Water Reuse: Overview of Current Practices and Trends in the World with Emphasis in EU States", *Water Utility Journal*, **6**, 67-78.
- P. Gikas**, 2014, "Electrical Energy Production from Biosolids: A Comparative Study between Anaerobic Digestion and Ultra-High-Temperature Gasification", *Environmental Technology*, **35**(17), 2140-2146.
- S.S. Sengor and **P. Gikas**, 2014, "The Influence of Single and Combined Effects of Zn, Cu and Temperature on Microbial Growth", *Global Nest Journal*, **16**(4), 699-706.
- E. Ranieri, A. Gorgoglione, C. Montanaro, A. Iacovelli and **P. Gikas**, 2014, "Removal Capacity of BTEX and Metals of Constructed Wetlands under the Influence of Hydraulic Conductivity", *Desalinated Water*, **56**(5), 1256-1263.
- E. Ranieri and **P. Gikas**, 2014, "Effects of Plants for Reduction and Removal of Hexavalent Chromium from a Contaminated Soil", *Water, Air, & Soil Pollution*, **225**(6), 1981-1989.
- S.S. Sengor, T. Ginn, C.J. Brugato, and **P. Gikas**, 2013, "Anaerobic Microbial Growth Near Thermodynamic Equilibrium as a Function of ATP/ADP Cycle: The Effect of Maintenance Energy Requirements", *Biochemical Engineering Journal*, **81**, 65-72.
- V.M. Daskalaki, H. Marakas, D. Mantzavinos, A. Katsaounis and **P. Gikas**, 2013, "Use of Seawater for the Boron-Doped Diamond Electrochemical Treatment of Diluted Vinasse Wastewaters", *Water Science and Technology*, **68**(11), 2344-2350.
- P. Gikas**, E. Ranieri and G. Tchobanoglous, 2013, "Removal Iron, Chromium and Lead from Wastewater by Horizontal Subsurface Flow Constructed Wetlands", *Journal of Chemical Technology and Biotechnology*, **88**(10), 1906-1912.
- E. Ranieri, **P. Gikas** and G. Tchobanoglous, 2013, "BTEX Removal in Pilot Scale Horizontal Subsurface Flow Constructed Wetlands", *Desalinated Water*, **5**, 3032-3039.
- M. Kellis, I. Kalavrouziotis and **P. Gikas**, 2013, "Review on Wastewater Reuse in the Mediterranean Countries, Focusing on Regulations and Policies for Municipal and Industrial Applications", *Global Nest Journal*, **15**(3), 333-350.
- E. Vaiopoulou and **P. Gikas**, 2012, "Effects of Chromium on Activated Sludge and on the Performance of Wastewater Treatment Plants: A Review", *Water Research*, **46**, 549-570.
- S.S. Sengor, **P. Gikas**, T.R. Ginn, J. Moberly and B. Peyton, 2012 "Comparison of Single and Joint Effects of Zn and Cu in Continuous Flow and Batch Reactors", *Journal of Chemical Technology and Biotechnology*, **87**(3), 374-380.
- S. Liu, L.G. Papageorgiou and **P. Gikas**, 2012, "Integrated Management of Non-Conventional Water Resources in Anhydrous Islands", *Water Resources Management*, **35**, 858-875.
- S. Liu, F. Konstantopoulou, L.G. Papageorgiou and **P. Gikas**, 2011, "A Mixed Integer Optimisation Approach for Integrated Water Resources Management", *Computers & Chemical Engineering*, **35**, 858-875.
- F. Konstantopoulou, S. Liu, L.G. Papageorgiou and **P. Gikas**, 2011, "Water Resources Management for Paros Island, Greece", *International Journal of Sustainable Water and Environmental Systems*, **2**(1), 1-6.
- S. Liu, L.G. Papageorgiou and **P. Gikas**, 2011, "Management of Desalinated Seawater, Wastewater and Reclaimed Water in Insular and Geographically Isolated Areas Using Optimisation Techniques", *Desalination and Water Treatment*, **33**, 3-13.
- B. Zhu, R. Zhang, **P. Gikas**, J. Rapport, B. Jenkins, X. Li, 2010, "Biogas Production from Municipal Solid Wastes Using an Integrated Rotary Drum and Anaerobic Phased Solids Digester System", *Biorecourse Technology*, **101**, 6374-6380.
- S.S. Sengor, S Barua, **P. Gikas**, T.R. Ginn, B. Peyton and R. Sani, 2009, "Influence of Heavy Metals on Microbial Growth Kinetics Including Lag Time: Mathematical Modeling and Experimental Verification", *Journal of Environmental Toxicology and Chemistry*, **28**(10), 2020-2029.
- S.S. Sengor, C.J. Brugato, **P. Gikas**, M. Fletcher and T.R. Ginn, 2009, "A Comparison of Approaches to Model Thermodynamics and Maintenance Energy Requirements of Microbial Metabolism", *Geochimica et Cosmochimica ACTA*, **73**(13), Suppl. S, A1196.
- P. Gikas**, S.S. Sengor, T.R. Ginn, J. Moberly and B. Peyton, 2009, "The Effects of Heavy Metals and Temperature on Microbial Growth and Lag", *Global Nest Journal*, **11**(3), 325-332.
- R. Zhang, J. Rapport, **P. Gikas**, B. Zhu, B. Jenkins, J. Lord and C. Choate, 2009, "Pretreating MSW Prior to Anaerobic Digestion", *BioCycle*, **April**, 20-25.
- P. Gikas** and A.N. Angelakis, 2009, "Water Resources Management in the Greek River Basin Districts of Crete and Aegean Islands, with Emphasis on the Utilization of Non-Conventional Water Sources", *Desalination*, **248**, 1049-1064.
- P. Gikas** and G. Tchobanoglous, 2009, "Sustainable Use of Water in the Aegean Islands", *Journal of Environmental Management*, **90**, 2601-2611.

- B. Zhu, **P. Gikas**, R. Zhang and X. Li, 2007, "Characterization and Anaerobic Digestion of Municipal Solid Waste Pretreated with A Rotary Drum Reactor", *Biorecourse Technology*, **100**, 1122-1129.
- P. Gikas** and G. Tchobanoglous, 2009, "The Role of Satellite and Decentralized Strategies in Water Resources Management", *Journal of Environmental Management*, **90**, 144-152.
- P. Gikas**, 2008, "Single and Combined Effects of Nickel and Cobalt Ions on Activated Sludge and on other Aerobic Microorganisms: A Review", *Journal of Hazardous Materials*, **159**, 187-203.
- P. Gikas**, 2008, "Commissioning of the Gigantic Anaerobic Sludge Digesters at the Wastewater Treatment Plant of Athens", *Environmental Technology*, **29**, 131-139.
- A. Paleologou, H. Marakas, N.P. Xekoukoulotakis, A. Moya, Y. Vergara, N. Kalogerakis, **P. Gikas** and D. Mantzavinos, 2007, "Disinfection of Water and Wastewater by TiO₂ Photocatalysis, Sonolysis and UV-C Irradiation", *Catalysis Today*, **129**, 136-142.
- P. Gikas** and A. G. Livingston, 2007, "Simulation of the Cellular Anabolic Activity within Biofilms: Where a New Immobilized Cell will Preferably Be Born?", *Biochemical Engineering Journal*, **35**, 29-36.
- P. Gikas**, 2007, "Kinetic Responses of Activated Sludge to Individual and Joint Nickel (Ni(II)) and Cobalt (Co(II)) – An Isobolographic Approach", *Journal of Hazardous Materials*, **143**, 246-256.
- P. Gikas** and P. Romanos, 2006, "Effects of Tri-valent (Cr(III)) and Hexa-valent (Cr(VI)) Chromium on the Growth of Activated Sludge", *Journal of Hazardous Materials*, **B133**, 212-217.
- P. Gikas** and A. G. Livingston, 2006, "Investigation of Biofilm Growth and Attrition in a Three Phase Air Lift Bioreactor Using ³⁵S as a Radiolabelled Tracer", *Journal of Chemical Technology and Biotechnology*, **81**, 858-865.
- P. Gikas** and A. G. Livingston, 1999, "Steady State Behaviour of Three Phase Air Lift Bioreactors – An Integrated Model and Experimental Verification", *Journal of Chemical Technology and Biotechnology*, **74**, 551-561.
- P. Gikas** and A. G. Livingston, 1998, "Use of ATP Concentration and Specific Oxygen Uptake Rate to Determine Parameters of a Structured Model of Biomass Growth", *Enzyme and Microbial Technology*, **22**, 500-510.
- P. Gikas** and A. G. Livingston, 1997, "Specific ATP and Specific Oxygen Uptake Rate in Immobilized Cell Aggregates: Experimental Results and Theoretical Analysis Using Structured Model of Immobilized Cell Growth", *Biotechnology and Bioengineering*, **55**, 660-673.
- P. Gikas** and A. G. Livingston, 1993, "Use of ATP to Characterize Biomass Viability in Freely Suspended and Immobilized Cell Bioreactors", *Biotechnology and Bioengineering*, **42**, 1337-1351.