

## GEORGE E. MARNELLOS

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### SUMMARY

Born in 1970, Dr. Marnellos graduated the Dept. of Chemical Engineering at Aristotle University of Thessaloniki (AUTH) in 1995. He obtained his Ph.D. in 1999 from the AUTH, and a Master degree in Business Administration from the Macedonia University (Thessaloniki) in 1998. Since 2003, he is appointing an academic position (today as an Associate Prof.) in the Department of Mechanical Engineering at the University of Western Macedonia (UoWM - Kozani, Greece), and he is also an affiliated faculty member in the Chemical Process & Energy Resources Institute (CPERI) at the Centre for Research & Technology Hellas (CERTH). In June 2015, he was appointed as Head of the newly founded Department of Environmental Engineering at the University of Western Macedonia. He is the co-author of 55 papers in international scientific journals, 19 in international conference proceedings, 64 in national conference proceedings and 2 book chapters, concerning solid state electrochemistry, heterogeneous catalysis and biomass-to-energy science and engineering. He is also holding an international patent, which deals with the use of high temperature proton conducting membrane reactors for electro-catalytic ammonia synthesis at atmospheric pressure. In 2005, he established and currently leading the research group of Sustainable Technologies on Alternative & Renewable FUELS. STAR FUELS' mission is to stimulate and conduct high-level fundamental and applied research in the fields of hydrogen technologies (production, recovery and fuel cells), air pollution control (NO<sub>x</sub>, VOCs, etc) and biomass to energy conversion technologies. Based on his efforts for research and institutional funding, STAR FUEL was rapidly staffed and equipped with over 2 M€ of modern and high quality analytical infrastructure. He had independently obtained numerous research grants and industrial contracts, while during his Ph.D. and Post-Doctoral and also as a faculty member, he participated in extended European research consortiums. In this context, he had the opportunity to develop and expand a valuable network of collaborators both in Greece and abroad, including worldwide appreciated academic and research institutions and well-known companies. Prof. Marnellos published work has been worldwide acknowledged with more than 660 citations (excluding self-citations), while special articles have been written by others in Journals' and newspapers' editorials referring to the novel method for ammonia synthesis. He is a regular reviewer in relevant scientific Journals and research funding agencies and he is/was a member in the organizing and scientific committees of international and national scientific conferences. In 2010, he obtained the Fulbright research scholarship to cooperate with MIT (Prof. Yang Shao Horn, Dept. of Mechanical Engineering) in the research field of fuel cells. Recently (November 2015), he was awarded by UoWM a prize for Innovative Research in 2012-2014. Based on his activities in hydrogen production and fuel cells, he was appointed by the Greek Ministry of Development as a deputy coordinator of the Fuel Cells for Stationary & Mobile Applications working group of the Hellenic Hydrogen Platform and as a representative in one of the fuel cell actions operating at COST. He has also acted as an evaluator expert in the corresponding calls of FCH-JU. Finally, he is the Vice-Chairman of the Hellenic Society of Hydrogen Technologies and ex-Chairman of the Hellenic Association of Chemical Engineers.

### BRIEF PRESENTATION

Publications in Refereed Journals	55
Publications in International Conferences' Proceedings	19
Publications in National Conferences' Proceedings	64
Patents	2
Chapters in Books	2
Translation in Greek of Scientific Text Books	2
Presentations in International Conferences	62
Presentations in National Conferences	68
Citations (excluding self-citations)	> 660
H-index	13
Doctoral Theses Supervision	5 (completed), 3 (running)
Invited Presentations	8
Reviewer in Scientific International Journals	28
Reviewer in Research Funding Agencies	11

## HIGHER EDUCATION

- 1995 – 1999** PhD in Chemical Engineering, Department of Chemical Engineering, AUTH  
**PhD Thesis:** “*Study of catalytic oxidation and hydrogenation reactions with the aid of oxygen and proton conducting solid electrolyte membrane reactors*”
- 1996 – 1998** Master in Business Administration, University of Macedonia  
**Master Thesis:** “*The method of Hazard Analysis of Critical Control Point (HACCP) and its implementation in the Greek food industry*”
- 1989 – 1995** Diploma in Chemical Engineering, Department of Chemical Engineering, AUTH  
**Thesis:** “*Study of the electrochemical activation of methane over a perovskite-type oxide catalyst*”

## APPOINTMENTS

- 2015 –** Chairman of the Department of Environmental Engineering, UoWM
- 2013 –** Associate Professor, Department of Mechanical Engineering, UoWM
- 2011 – 2014** Adjunct Professor, International Hellenic University
- 2009 –** Supervision of Master Theses, Hellenic Open University
- 2011 (01-03)** Fulbright Visiting Professor at MIT (Dept. Mechanical Engineering)
- 2008 – 2013** Assistant Professor, Department of Mechanical Engineering, UoWM
- 2003 – 2008** Lecturer, Department of Mechanical Engineering, UoWM
- 2003 –** Research Associate, CPERI/CERTH
- 1999 – 2003** Post-Doc Researcher, CPERI/CERTH
- 1999 – 2003** Visiting Lecturer, Dept. of Pollution Control Technologies, TEI of West Macedonia
- 1999 – 2003** Post-Graduate Researcher, CPERI/CERTH

## TEACHING ACTIVITIES

General Chemistry, Environmental Technology, Unit Operations, Chemical Reaction Engineering, Environmental Chemistry, Special Issues on Pollution Control Technologies, Special Issues on Energy Conversion Technologies, Heterogeneous Catalysis, Introduction to Energy Technology Systems (Master level), Supervisor in Diploma, Master and Doctoral Theses

### *Doctoral Theses*

1. “The use of solid electrolyte membrane reactors for the optimization of industrially important chemical reactions”, **K. Kalimeri**, UoWM, Greece (completed on 27-11-2007).
2. “Selective catalytic reduction of nitrogen oxides by hydrocarbons in conventional catalytic reactors and in alkali conducting solid electrolyte membrane reactors”, **G. Pekridis**, UoWM, Greece (completed on 04-05-2009).
3. “Novel anodic composites for direct hydrocarbon fuel cells”, **N. Kaklidis**, UoWM, Greece (completed on 06-05-2011).
4. “Simulation of transport phenomena in fuel cells”, **E. Vakouftsi**, UoWM, Greece (completed on 12-07-2011).
5. “Development of high temperature proton conducting solid oxide fuel cells for the co-generation of electricity, thermal power and useful chemical products”, **Z. Ioakeimidis**, UoWM, Greece (completed on 22-10-2015).
6. “Development of efficient structure and/or surface promoted catalytic systems, for the simultaneous abatement of nitrous and nitric oxides (N<sub>2</sub>O, NO<sub>x</sub>)”, **E. Papista**, UoWM, Greece (expected on 03/2016)
7. “Hydrogen production from H<sub>2</sub>S decomposition in a micro-structured H<sup>+</sup>-conducting solid oxide membrane reactor”, **Tz. Kraia**, UoWM, Greece (expected on 09/2016).
8. “Solid fuels energy conversion in gasification-SOFC integrated units and in direct coal fuel cells”, **A. Koutsianos**, UoWM, Greece (started on 2015).

## RESEARCH INTERESTS

- Physical-chemistry behaviour of surfaces and interfaces; Catalysis and role of promoters.
- Chemical kinetics and thermodynamics; Reactor engineering; Chemical processes engineering.
- Solid state electrochemistry; Electro-catalysis; Electrochemical Promotion, Electrodeics.
- Biomass energy conversion technologies
- Fuel cells (physical chemistry, thermodynamics, mathematical modelling).
- Analysis and design of novel fuel cell and electrochemical reactor concepts.
- Environmental pollution control, Environmental engineering, Environmental catalysis.
- Hydrogen production/recovery and use.
- Natural gas, biofuels and hydrocarbons valorization.

## RESEARCH ACHIEVEMENTS

Dr. Marnellos, either as a PhD candidate/Post-Doc or as a senior scientist, involved in a number of significant research contributions. Specifically, his research efforts have led to the following achievements:

1. **Electrochemical aided shift of equilibrium limited reactions** – Prof. Marnellos first reported [Marnellos and Stoukides, *Science* 282 (1998) 98; Marnellos et al., *J. Catal.* 193 (2000) 80; Marnellos et al., *Sol. St. Ionics* 97 (1997) 375; etc] a new method based on  $H^+$  conducting solid electrolyte membrane reactors (SEMRs) to synthesize ammonia at atmospheric pressure bypassing the thermodynamic restrictions that limit equilibrium conversion. This pioneering work has opened new orisons for various similar chemical processes ( $CH_3OH$  synthesis) as well as for the un-resolved problems arising during nitrogen fixation.
2. **Electrochemical promotion of reactions** – Prof. Marnellos is still working on the electrochemical promotion of various industrially important chemical reactions (e.g. hydrocarbons partial oxidation/reforming and selective catalytic reduction of nitrogen oxides) in both  $O^{2-}$  and  $H^+$  conducting SEMRs [Tsiakaras et al., *Appl. Catal. A* 169 (1998) 249; Pekridis et al., *Catal. Today* 127 (2007) 337; etc]. Especially, in the case of  $H^+$ -SEMRs, pure  $H_2$  can be produced and recovered in a single device minimizing the downstream treatment costs.
3.  **$NO_x$  and  $N_2O$  abatement using water as a hydrogen source** – Prof. Marnellos developed a new concept to abate  $NO_x$  and  $N_2O$  to  $N_2$  using a double chamber  $H^+$ -SEMR steam electrolysis cell [Kalimeri et al. *Sol. St. Ionics* 181 (2010) 223]. This advantageous process does not require any storage or usage of extra reducing agent since the easily stored and abundant  $H_2O$  is used as a  $H_2$  source. Moreover, as a side effect of steam electrolysis, pure  $O_2$  can be produced on the anode.
4. **Simultaneous reduction of  $NO_x$  and  $N_2O$  by hydrocarbons in excess oxygen** – A dual bed catalytic reactor consisting of  $In/\gamma-Al_2O_3$  and  $Ru/\gamma-Al_2O_3$  was demonstrated [Marnellos et al., *Ind. Eng. Chem. Res.* 43 (2004) 2413], in which high  $NO_x$  (70%) and  $N_2O$  (90%) conversions were achieved even under realistic conditions for long term operation, leading to new aspects for nitrogen oxides and hydrocarbons emissions reduction in the flue gases of power plants and automotive exhausts.
5. **Classical vs electrochemical catalytic promotion** – The well-defined rules of catalyst's promotion described by Vayenas et al. ("Electrochemical Promotion of Catalysis", Kluwer Eds. 2001) and the similarities existing between classical and electrochemical promotion, were verified also for  $N_2O$  reduction reaction in potassium promoted Pd catalysts and electrodes [Pekridis et al., *Sol. St. Ionics*, 192 (2011) 653], where the promotional effects were attributed to the changes in the strength of reactants' chemisorptive bonds.
6. **Direct hydro-carbon SOFCs** – Recent research activities of Prof. Marnellos are devoted to the development of multi-component anodic composites based on  $Cu-M/CeO_2$  (M: a second metal), for direct hydrocarbon and fossil or bio-based carbon fed SOFCs. Promising results have been obtained in the case of carbon fed  $O^{2-}$ -SOFCs, where power outputs similar to  $H_2$  fed SOFCs were achieved [Konsolakis et al., *RSC Adv*, 4 (2014) 18792; *Chin. J. Catal.*, 36 (2015) 509].
7. **SOFC integration in biomass thermochemical processes** – STAR FUEL was one of the first teams that reported the integration of SOFCs to thermochemical and biological biomass conversion processes, where power can be produced at higher efficiencies exceeding those obtained in conventional thermal cycles [Athanasίου et al., *Intl. Hydrogen Energy* 32 (2007) 337].
8. **Hydrogen production from  $H_2S/H_2O$  mixtures** – Prof. Marnellos and his team were first reported a novel process based on micro-structured proton conducting ceramic membrane reactors to simultaneously electrolyze  $H_2S$  and  $H_2O$  to pure  $H_2$  in a single device. This concept can be implemented in Black Sea waters and geothermal springs [Ipsakis et al., *Intl. J. Hydrogen Energy*, 40 (2015) 7530].
9. **Structure/surface chemistry-performance correlation** – Significant advancements are expected to be achieved when the activity of catalysts/electrodes is correlated with their structure and surface chemistry. With the aid of various advanced surface and structure characterization techniques this route has been followed by the group of Prof. Marnellos in many applications [Al-Musa et al., *Intl. J. Hydrogen Energy*, 39 (2014) 19541; Konsolakis et al., *Catal. Sci. Tech.*, 5 (2015) 3714].

## LIST OF PUBLICATIONS

### A. Publications in Scientific Peer-Reviewed Journals

- A1. "Electrode polarization and electrical properties of the  $La_{0.6}Sr_{0.4}Co_{0.8}Fe_{0.2}O_{3-a}$  / Ytria Stabilized Zirconia interface: Effect of gas phase composition and temperature", P. Tsiakaras, G. Marnellos, C. Athanasίου, M. Stoukides, J.E. ten Elshof, H.J.M. Bouwmeester and H. Verweij. *Solid State Ionics*, **86-88**, 1451-1456 (1996).
- A2. "Modelling of solid oxide proton conducting reactor-cells: Thermodynamics and kinetics", G. Marnellos, C. Athanasίου, P. Tsiakaras, and M. Stoukides. *Ionics*, **2**, 412-420 (1996).
- A3. "Catalytic and electrocatalytic oxidation of methane on palladium electrodes in a solid electrolyte cell", C. Athanasίου, G. Marnellos, P. Tsiakaras and M. Stoukides. *Ionics*, **2**, 353-360 (1996).
- A4. "The use of proton conducting solid electrolytes for improved performance of hydro- and dehydrogenation reactors", G. Marnellos, O. Sanopoulou, A. Rizou, and M. Stoukides. *Solid State Ionics*, **97**, 375-383 (1997).

- A5. “Catalytic and electrocatalytic oxidation of ethylene on a perovskite electrode in a solid electrolyte cell”, G. Marnellos, C. Athanasiou, T. Angelidis, and M. Stoukides. *Ionics*, **3**, 96-103 (1997).
- A6. “Methane activation on a  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-a}$  perovskite. Catalytic and electrocatalytic results”, C. Athanasiou, G. Marnellos, J.E. ten Elshof, P. Tsiakaras, H.J.M. Bouwmeester, and M. Stoukides. *Ionics*, **3**, 128-133 (1997).
- A7. “Methane activation on a  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-a}$  perovskite. Catalytic and electrocatalytic results”, P. Tsiakaras, C. Athanasiou, G. Marnellos, M. Stoukides, J.E. ten Elshof, and H.J.M. Bouwmeester. *Applied Catalysis A: General*, **169**, 249-261 (1998).
- A8. “Ammonia synthesis at atmospheric pressure”, G. Marnellos, and M. Stoukides. *Science*, **282**, 98-100 (1998).
- A9. “Evaluation and use of the  $\text{Pd}/\text{SrCe}_{0.95}\text{Yb}_{0.05}\text{O}_3/\text{Pd}$  electrochemical reactor for equilibrium-limited hydrogenation reactions”, G. Marnellos, C. Athanasiou, and M. Stoukides. *Ionics*, **4**, 141-147 (1998).
- A10. “Polarization studies in the  $\text{Pd}/\text{SrCe}_{0.95}\text{Yb}_{0.05}\text{O}_3/\text{Pd}$  proton conducting solid electrolyte cell”, G. Marnellos, A. Kyriakou, F. Flouros, T. Angelidis and M. Stoukides. *Solid State Ionics*, **125**, 279-284 (1999).
- A11. “Hazard Analysis Critical Control Point (HACCP): Implementation in the Greek Industry”, G. Marnellos and G. Tsiotras. *Quality Reliability Engineering International*, **15**, 385-396 (1999).
- A12. “Synthesis of ammonia at atmospheric pressure with the use of solid state proton conductors”, G. Marnellos, S. Zisekas and M. Stoukides. *Journal of Catalysis*, **193**, 80-87 (2000).
- A13. “Electrocatalytic synthesis of ammonia at atmospheric pressure”, G. Marnellos, G. Karagiannakis, S. Zisekas and M. Stoukides. *Studies in Surface Science and Catalysis*, **300A**, pp. 413-418, Elsevier, (2000).
- A14. “Study of ammonia decomposition in a proton conducting solid electrolyte cell”, S. Zisekas, G. Karagiannakis, G. Marnellos and M. Stoukides. *Ionics*, **8**, 118-122, (2002).
- A15. “Catalytic and electrocatalytic oxidation of CO on a Fe electrode in a solid electrolyte cell”, G. Marnellos, S. Zisekas and A. Kungolos. *Applied Catalysis B: Environmental*, **42(3)**, 225-236, (2002).

**Lecturer, Dept. Mechanical Engineering, UoWM**

- A16. “Simultaneous  $\text{N}_2\text{O}$  and NO reduction over carbon supported catalysts”, F. Concalves, G.E. Marnellos, E.A. Efthimiadis and J.L. Figueiredo. *Reaction Kinetics and Catalysis Letters*, **80**, 153-159 (2003).
- A17. “Effect of  $\text{SO}_2$  and  $\text{H}_2\text{O}$  on the  $\text{N}_2\text{O}$  decomposition in the presence of  $\text{O}_2$ ”, G.E. Marnellos, E.A. Efthimiadis and I.A. Vasalos. *Applied Catalysis B: Environmental*, **46(3)**, 523-539 (2003).
- A18. “Mechanistic and kinetic analysis of the  $\text{NO}_x$  selective catalytic reduction by hydrocarbons in excess  $\text{O}_2$  over  $\text{In}/\text{Al}_2\text{O}_3$  in the presence of  $\text{SO}_2$  and  $\text{H}_2\text{O}$ ”, G.E. Marnellos, E.A. Efthimiadis and I.A. Vasalos. *Applied Catalysis B: Environmental*, **48(1)**, 1-15 (2004).
- A19. “Simultaneous catalytic reduction of  $\text{NO}_x$  and  $\text{N}_2\text{O}$  in a  $\text{In}/\text{Al}_2\text{O}_3 - \text{Ru}/\text{Al}_2\text{O}_3$  dual bed reactor in the presence of  $\text{SO}_2$  and  $\text{H}_2\text{O}$ ”, G.E. Marnellos, E.A. Efthimiadis and I.A. Vasalos. *Industrial & Engineering Chemistry Research*, **43(10)**, 2413-2419 (2004).
- A20. “Kinetic and mechanistic studies of  $\text{NO}_x$  reduction over  $\text{In}/\text{Al}_2\text{O}_3$  and  $\text{N}_2\text{O}$  decomposition over  $\text{Ru}/\text{Al}_2\text{O}_3$ ”, G.E. Marnellos, M.P. Antoniou, E.A. Efthimiadis and I.A. Vasalos. *Water, Air & Soil Pollution: Focus (WAFO)*, **4(4-5)**, 31-43 (2004).
- A21. “Catalytic studies in electrochemical membrane reactors”, G. Marnellos and M. Stoukides. *Solid State Ionics*, **175(1-4)**, 597-603 (2004).
- A22. “Effect of palladium oxidation state on the kinetics and mechanism of the charge transfer reaction taking place at the  $\text{Pd}/\text{YSZ}$  interface”, K. Kalimeri, G. Pekridis, S. Vartzoka, C. Athanassiou and G. Marnellos. *Solid State Ionics*, **177(11-12)**, 979-988 (2006).
- A23. “Hydrogen production in solid electrolyte membrane reactors”, G. Pekridis, N. Kaklidis, K. Kalimeri, S. Vartzoka, C. Athanassiou and G. Marnellos. *International Journal of Hydrogen Energy*, **32(1)**, 38-54 (2007).
- A24. “From biomass to electricity through integrated gasification/SOFC system-optimization and energy balance”, C. Athanasiou, F. Coutelieris, E. Vakouftsi, V. Skoulou, E. Antonakou, G. Marnellos and A. Zabaniotou. *International Journal of Hydrogen Energy*, **32(3)**, 337-342 (2007).
- A25. “Electrode polarization measurements in the  $\text{Fe}/\text{SrCe}_{0.95}\text{Yb}_{0.05}\text{O}_{2.975}/\text{Au}$  proton conducting solid electrolyte cell”, G. Pekridis, K. Kalimeri, N. Kaklidis, C. Athanasiou and G.E. Marnellos. *Solid State Ionics*, **178(7-10)**, 649-656 (2007).
- A26. “Study of the reverse water gas shift reaction (RWGS) reaction over Pt in a solid oxide fuel cell (SOFC) operating under open and closed-circuit conditions”, G. Pekridis, K. Kalimeri, N. Kaklidis, E. Vakouftsi, E.F. Iliopoulou, C. Athanasiou and G.E. Marnellos. *Catalysis Today*, **127**, 337-346 (2007).

**Assistant Professor, Dept. of Mechanical Engineering, UoWM**

- A27. “Modelling of flow and transport processes occurred in a typical Polymer Electrolyte Membrane Fuel Cell (PEMFC)”, E. Vakouftsi, G.E. Marnellos, C. Athanasiou, F.A. Coutelieris. *Defect and Diffusion Forum*, **273-276**, 87-92 (2008).
- A28. “Efficiencies of olive kernel gasification combined cycle with Solid Oxide Fuel Cells (SOFC)”, C. Athanasiou, E. Vakouftsi, F.A. Coutelieris, G. Marnellos, A. Zampaniotou. *Chemical Engineering Journal*, **149(1-3)**, 183-190 (2009).

- A29. "Effect of pretreatment and regeneration conditions of Ru/Al<sub>2</sub>O<sub>3</sub> catalysts for N<sub>2</sub>O decomposition and/or reduction in O<sub>2</sub> rich atmospheres and in the presence of NO<sub>x</sub>, SO<sub>2</sub> and H<sub>2</sub>O", V.G. Komvokis, G.E. Marnellos, I.A. Vasalos and K.S. Triantifyllidis. *Applied Catalysis B: Environmental*, **89(3-4)**, 627-634 (2009).
- A30. "N<sub>2</sub>O abatement over  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> supported catalysts: Effect of reducing agent and active phase nature", G. Pekridis, C. Athanasiou, M. Konsolakis, I.V. Yentekakis and G.E. Marnellos. *Topics in Catalysis*, **52(13)**, 1880-1887 (2009).
- A31. "Electro-reduction of nitrogen oxides using steam electrolysis in a proton conducting solid electrolyte membrane reactor (H<sup>+</sup>-SEMR)", K. Kalimeri, C. Athanasiou and G.E. Marnellos. *Solid State Ionics*, **181(3-4)**, 223-229 (2010).
- A32. "Theoretical investigation of the relation between the output of a methane internal reforming SOFC and the composition of the feedstream", E. Vakouftsi, C. Athanasiou, G. Marnellos and F.A. Coutelieris. *Defect and Diffusion Forum*, **297-301**, 838-843 (2010).
- A33. "Surface and catalytic elucidation of Rh/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalysts during NO reduction by C<sub>3</sub>H<sub>8</sub> in the presence of excess O<sub>2</sub>, H<sub>2</sub>O and SO<sub>2</sub>", G. Pekridis, N. Kaklidis, V. Komvokis, C. Athanasiou, M. Konsolakis, I.V. Yentekakis and G.E. Marnellos. *The Journal of Physical Chemistry A*, **114(11)**, 3969-3980 (2010).
- A34. "A comparison between electrochemical and conventional catalyst promotion: the case of N<sub>2</sub>O reduction by alkanes or alkenes over K-modified Pd Catalysts", G. Pekridis, N. Kaklidis, M. Konsolakis, C. Athanasiou, I.V. Yentekakis and G.E. Marnellos. *Solid State Ionics*, **192(1)**, 653-658 (2011).
- A35. "A detailed model for transport processes in a methane fed planar SOFC", E. Vakouftsi, G.E. Marnellos, C. Athanasiou and F.A. Coutelieris. *Chemical Engineering Research and Design*, **89(2)**, 224-229 (2011).
- A36. "CFD modeling of a biogas fuelled SOFC", E. Vakouftsi, G.E. Marnellos, C. Athanasiou and F. Coutelieris. *Solid State Ionics*, **192(1)**, 458-463 (2011).
- A37. "Direct electro-oxidation of iso-octane in a solid electrolyte fuel cell", N. Kaklidis, G. Pekridis, C. Athanasiou and G.E. Marnellos. *Solid State Ionics*, **192(1)**, 435-443 (2011).
- A38. "Correlation of surface characteristics with catalytic performance of potassium promoted Pd/Al<sub>2</sub>O<sub>3</sub> catalysts: The case of N<sub>2</sub>O reduction by alkanes or alkenes", G. Pekridis, N. Kaklidis, M. Konsolakis, E.F. Iliopoulou, I.V. Yentekakis and G.E. Marnellos. *Topics in Catalysis*, **54(16-18)**, 1135-1142 (2011).
- A39. "Acetic acid internal reforming in a solid oxide fuel cell reactor using Cu-CeO<sub>2</sub> anodic composites", N. Kaklidis, V. Besikiotis, G. Pekridis, G.E. Marnellos. *International Journal of Hydrogen Energy*, **37(21)**, 16722-16732 (2012).
- A40. "Direct electro-oxidation of acetic acid in a solid oxide fuel cell", N. Kaklidis, G. Pekridis, V. Besikiotis, C. Athanasiou, G.E. Marnellos. *Solid State Ionics*, **225**, 398-407 (2012).
- A41. "Insights into the role of SO<sub>2</sub> and H<sub>2</sub>O on the surface characteristics and de-N<sub>2</sub>O efficiency of Pd/Al<sub>2</sub>O<sub>3</sub> catalysts during N<sub>2</sub>O decomposition in the presence of CH<sub>4</sub> and O<sub>2</sub> excess", M. Konsolakis, I.V. Yentekakis, G. Pekridis, N. Kaklidis, A.C. Psarras, G.E. Marnellos. *Applied Catalysis B: Environmental*, **138-139**, 191-198 (2013).
- A42. "Iso-Octane internal reforming in a solid oxide fuel cell using Co/CeO<sub>2</sub> as anode", A. Al-Musa, V. Kyriakou, M. Al-Saleh, R. Al-Shehri, N. Kaklidis, G.E. Marnellos. *ECS Transactions*, **58(3)**, 131-143 (2013).
- Associate Professor, Dept. of Mechanical Engineering, UoWM**
- A43. "Hydrogen production by iso-octane steam reforming over Cu catalysts supported on Rare Earth Oxides (REOs)", A. Al-Musa, M. Al-Saleh, Z. Ioakimidis, M. Ouzounidou, I.V. Yentekakis, M. Konsolakis, G.E. Marnellos. *International Journal of Hydrogen Energy*, **39(3)**, 1350-1363 (2014).
- A44. "Effect of carbon type on the performance of a Direct or Hybrid Carbon Solid Oxide Fuel Cell", N. Kaklidis, V. Kyriakou, I. Garagounis, A. Arenillas, J.A. Menendez, G.E. Marnellos, M. Konsolakis. *Royal Society of Chemistry Advances*, **4(36)**, 18792 - 18800 (2014).
- A45. "Steam reforming of iso-octane toward hydrogen production over mono- and bi-metallic Cu-Co/CeO<sub>2</sub> catalysts: Structure-activity correlations", A.A. Al-Musa, Z.S. Ioakeimidis, M.S. Al-Saleh, A. Al-Zahrany, G.E. Marnellos, M. Konsolakis. *International Journal of Hydrogen Energy*, **39(34)**, 19541-19554 (2014).
- A46. "An electrocatalytic membrane-assisted process for hydrogen production from H<sub>2</sub>S in Black Sea: Preliminary results", D. Ipsakis, Tz. Kraia, G.E. Marnellos, M. Ouzounidou, S. Voutetakis, R. Dittmeyer, A. Dubbe, K. Haas-Santo, M. Konsolakis, H.E. Figen, N.O. Güldal, S.Z. Baykara. *International Journal of Hydrogen Energy*, **40(24)**, 7530-7538 (2015).
- A47. "Carbon to electricity in a solid oxide fuel cell combined with an internal catalytic gasification process", M. Konsolakis, G.E. Marnellos, A. A-Musa, N. Kaklidis, I. Garagounis, V. Kyriakou. *Chinese Journal of Catalysis* **36**, 509-516 (2015).
- A48. "Direct utilization of Lignite coal in a Co-CeO<sub>2</sub>/YSZ/Ag solid oxide fuel cell", N. Kaklidis, I. Garagounis, V. Kyriakou, V. Besikiotis, A. Arenillas, J.A. Menéndez, G.E. Marnellos, M. Konsolakis. *International Journal of Hydrogen Energy*, **40**, 14353-13363 (2015).
- A49. "Nitrous oxide decomposition over Al<sub>2</sub>O<sub>3</sub> supported noble metals (Pt, Pt, Ir): Effect of metal loading and feed composition", E. Pachaturidou, E. Papista, E.F. Iliopoulou, A. Delimitis, G. Goula, I.V. Yentekakis, G.E. Marnellos, M. Konsolakis. *Journal of Environmental Chemical Engineering*, **3(2)**, 815-821 (2015).

- A50. "Effect of preparation method on the solid state properties and the deN<sub>2</sub>O performance of CuO-CeO<sub>2</sub> oxides", M. Konsolakis, S.A.C. Carabineiro, E. Papista, G.E. Marnellos, P.B. Tavares, J. Agostinho Moreira, Y. Romaguera-Barcelay, J.L. Figueiredo. *Catalysis Science & Technology*, **5**, 3714-3727 (2015).
- A51. "Electro-catalytic and fuel cell studies in an internal reforming iso-octane fed SOFC using Cu/CeO<sub>2</sub> composites as anodic electrodes", A. Al-Musa, M. Al-Saleh, A. Al-Zahrani, N. Kaklidis, G.E. Marnellos. *ECS Transactions*, **66(3)**, 125-136 (2015).
- A52. "Assessment of biochar as feedstock in a direct carbon solid oxide fuel cell", M. Konsolakis, N. Kaklidis, G.E. Marnellos, D. Zaharaki, K. Komnitsas. *Royal Society of Chemistry Advances*, **5**, 73399-73409 (2015).
- A53. "Iso-octane internal reforming in a solid oxide cell reactor", A. Al-Musa, N. Kaklidis, M. Al-Saleh, A. Al-Zahrani, V. Kyriakou, G.E. Marnellos. *Solid State Ionics*, in press (2016).
- A54. "Effect of Fuel Thermal Pretreatment on The Electrochemical Performance of a Direct Lignite Coal Fuel Cell", N. Kaklidis, V. Kyriakou, G.E. Marnellos, R. Strandbakke, A. Arenillas, J.A. Menéndez, M. Konsolakis. *Solid State Ionics*, in press (2016).
- A55. "N<sub>2</sub>O decomposition over ceria-promoted Ir/Al<sub>2</sub>O<sub>3</sub> catalysts: The role of ceria", E. Pachatouridou, E. Papista, A. Delimitis, M.A. Vasiliades, A.M. Efstathiou, M.D. Amiridis, O.S. Alexeev, D. Bloom, G.E. Marnellos, M. Konsolakis and E. Iliopoulou. *Applied Catalysis B: Environmental*, **187**, 259-268 (2016).

### **B. Publications in International Conference Proceedings**

- B1. "Catalytic behavior of La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-a</sub> perovskite-type oxide during methane combustion" C. Athanasiou, G. Marnellos and P. Tsiakaras. *Proc. 5<sup>th</sup> Intl. Symposium on SOFC, Aachen Germany, June, 983-992, 1997*.
- B2. "Kinetic and mechanistic studies of NO<sub>x</sub> reduction over In/Al<sub>2</sub>O<sub>3</sub> and N<sub>2</sub>O decomposition over Ru/Al<sub>2</sub>O<sub>3</sub> in the presence of C<sub>3</sub>H<sub>6</sub>", G.E. Marnellos, M.P. Antoniou, E.A. Efthimiadis and I.A. Vasalos. *Proc. 6<sup>th</sup> International Conference on Protection and Restoration of the Environment, Skiathos Island, Greece, July 1-5, 1073-1080, 2002*.
- B3. "Electrochemical promotion of CO oxidation on a Fe electrode", G.E. Marnellos, S. Zisekas and A. Kungolos. *Proc. 6<sup>th</sup> International Conference on Protection and Restoration of the Environment, Skiathos Island, Greece, July 1-5, 1081-1088, 2002*.
- B4. "The catalytic conversion of NO and N<sub>2</sub>O to N<sub>2</sub> in the presence of H<sub>2</sub>O and SO<sub>2</sub> over Ru/Al<sub>2</sub>O<sub>3</sub>-In/Al<sub>2</sub>O<sub>3</sub>", E.A. Efthimiadis, G.E. Marnellos, S.C. Christophorou and I.A. Vasalos. *Proc. 17<sup>th</sup> International Symposium on Chemical Reaction Engineering, Hong Kong, China, August 25-28, 2002*.

### **Lecturer, Dept. Mechanical Engineering, UoWM**

- B5. "Electrochemical oxidation of methane over an iron electrode in a solid electrolyte cell", A. Kungolos, C. Athanasiou, K. Kalimeri, N. Kyratzis and G. Marnellos. *Proc. 7<sup>th</sup> International Conference on Protection and Restoration of the Environment, Myconos Island, Greece, June 28 -July 1, 2004*.
- B6. "Hydrogen production from partial oxidation of CH<sub>4</sub> in an YSZ O<sup>2-</sup> conducting membrane reactor", C. Athanasiou, G. Marnellos, E. Antonakou, E. Patziatzi, A. Bousis, N. Kyratzis and P. Tsiakaras. *Proc. 7<sup>th</sup> International Conference on Protection and Restoration of the Environment, Myconos Island, Greece, June 28 -July 1, 2004*.
- B7. "Optimization and Energy Balance of the Biomass Gasification - Solid Oxide Fuel Cell Integrated Process", C. Athanasiou, F. Koutelieris, E. Vakouftsi, V. Skoulou, E. Antonakou, G. Marnellos and A. Zabaniotou. *Proc. 2<sup>nd</sup> Exergy, Energy and Environment Symposium (IEEES-2), Kos - Greece, 3 - 7 July 2005*.
- B8. "Feasibility Study and Market Analysis of Biodiesel Production in Greece", C. Athanasiou, E. Antonakou and G. Marnellos. *Proc. 1<sup>st</sup> Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE 2007), Skiathos - Greece, 24 - 28 June 2007*.
- B9. "Exergy Analysis of the Integrated Biomass Gasification - Solid Oxide Fuel Cell Process", C. Athanasiou, S. Douvartzides, E. Vakouftsi, F. Coutelieris and G. Marnellos. *Proc. 3<sup>rd</sup> International Exergy Energy and Environment Symposium, Evora - Portugal, 1 - 5 July 2007*.
- B10. "Microscopic modeling of transport phenomena in a planar solid oxide fuel cell", E. Vakouftsi, G. Marnellos, C. Athanasiou and F. Coutelieris. *Proc. 3<sup>rd</sup> International Exergy Energy and Environment Symposium, Evora - Portugal, 1 - 5 July 2007*.
- B11. "Modeling of flow and transport processes occurred in a typical polymer electrolyte membrane fuel cell (PEM-FC)", E. Vakouftsi, G. Marnellos, C. Athanasiou and F.A. Coutelieris. *Proc. 3<sup>rd</sup> International Conference on Diffusion in Solids and Liquids, Algarve - Portugal, 4 - 6 July 2007*.

### **Assistant Professor, Dept. of Mechanical Engineering, UoWM**

- B12. "Electrocatalytic decomposition of nitrous oxides using steam electrolysis in a Pd|SrCe<sub>0.95</sub>Yb<sub>0.05</sub>O<sub>3-a</sub>|Ag proton conducting solid electrolyte membrane reactor", K. Kalimeri, G. Pekridis, N. Kaklidis, E.F. Iliopoulou, C. Athanasiou, G.E. Marnellos. *Proc. 1<sup>st</sup> International Conference on the Origin of Electrochemical Promotion of Catalysis (OREPOC), Thessaloniki - Greece, 1-5 October, 95-98, 2007 (Edited by D. Tsiplakides & S. Balomenou ISBN: 978-960-98231-0-4)*.

B13. “Mechanistic analysis of methane dry reforming over palladium electrodes in an YSZ cell”, K. Kalimeri, G. Pekridis, N. Kaklidis, M. Ouzounidou, G. Marnellos, C. Athanasiou. *Proc. 1<sup>st</sup> International Conference on the Origin of Electrochemical Promotion of Catalysis (OREPOC), Thessaloniki – Greece, 1-5 October, 144-148, 2007 (Edited by D. Tsiplakides & S. Balomenou ISBN: 978-960-98231-0-4).*

B14. “Biomass pyrolysis and solid oxide fuel cells conjunction: Simulation and preliminary technoeconomical data”, C. Athanasiou, J. Garagounis, G. Marnellos, E. Antonakou, I. Fessas and A. Lappas. *Proc. Conference on the promotion of Distributed Renewable Energy Sources in the Mediterranean region, Nicosia, Cyprus, 11-12 December 2009.*

B15. “Carbon to electricity in a novel solid oxide fuel cell employing Cu-based catalysts as anodic composites and carbon additives”, M. Konsolakis, G.E. Marnellos, I. Garagounis, V. Kyriakou. *Proc. 6<sup>th</sup> International Conference on Clean Coal Technologies, Thessaloniki, Greece, 12-16 May 2013.*

B16. “Iso-Octane internal reforming in a solid oxide fuel cell using Co/CeO<sub>2</sub> as anode”, A. Al-Musa, V. Kyriakou, M. Al-Saleh, R. Al-Shehri, N. Kaklidis, G.E. Marnellos. *Proc. 224<sup>th</sup> Electrochemical Society Meeting, San Francisco, USA, October 27 – November 1 2013.*

#### **Associate Professor, Dept. of Mechanical Engineering, UoWM**

B17. “An electrocatalytic membrane-assisted process for hydrogen production from H<sub>2</sub>S in Black Sea: Preliminary results”, D. Ipsakis, Tz. Kraia, G.E. Marnellos, M. Ouzounidou, S.Voutetakis, R.Dittmeyer, A.Dubbe, K. Haas-Santo, M. Konsolakis, H.E.Figen, N.O.Güldal, S.Z.Baykara. *Proc. 13<sup>th</sup> International Conference on Clean Energy, Istanbul, Turkey, June 8-12, 1028-1035, 2014.*

B18. “Direct utilization of lignite coal in a Co-CeO<sub>2</sub>/YSZ/Ag Solid Oxide Fuel Cell”, N. Kaklidis, I. Garagounis, V. Kyriakou, V. Besikiotis, A. Arenillas, J.A. Menéndez, G.E. Marnellos, M. Konsolakis. *Proc. 13<sup>th</sup> International Conference on Clean Energy, Istanbul, Turkey, June 8-12, 3191-3200, 2014.*

B19. “Nitrous oxide decomposition over Al<sub>2</sub>O<sub>3</sub> supported noble metal (Pt, Pd, Ir) catalysts: Effect of metal loading and feed composition”, E. Papista, E. Pachatouridou, E.F. Iliopoulou, A. Delimitis, G. Goula, I.V. Yentekakis, G.E. Marnellos, M. Konsolakis. *Proc. 13<sup>th</sup> International Conference on Clean Energy, Istanbul, Turkey, June 8-12, 2593-2601, 2014.*

#### **C. Chapters in Books**

1. “Integration of hydrogen energy technologies in autonomous power systems”, G.E. Marnellos, C. Athanasiou, S.S. Makridis, E.S. Kikkinides, Ch. 3, p. 23-82 in “**Hydrogen based autonomous power systems**. Technoeconomic analysis of the integration of hydrogen in autonomous power systems” by N. Lymberopoulos and E.I. Zoulias, Springer Eds 2008 (ISBN: 978-1-84800-246-3).

2. “Bio-hydrogen: Production technologies, prospects and socio-economic aspects”, Z. Ioakeimidis, T. Kraia, M. Ouzounidou, G.E. Marnellos, Ch. 12 in “**Biofuels – Sustainable Energy**”. Editors N. Karnavos, A. Lappas and G.E. Marnellos, Tziolas Editions, 2014.

#### **D. Patents**

1. “Method and apparatus for ammonia synthesis at atmospheric pressure”, G. Marnellos and M. Stoukides. *European Patent 0972855 A1 & B1 (2001).*

2. “Method and prototype reactor for ammonia synthesis at atmospheric pressure”, G. Marnellos and M. Stoukides. *Greek Patent 1003196 (1999).*

#### **TRANSLATION IN GREEK OF SCIENTIFIC TEXTBOOKS**

1. “**Basic Principles and Calculations in Chemical Engineering**” D.M. Himmeblau, *Prentice Hall.*

2. “**Elements of Chemical Reaction Engineering**”, H. Scott Fogler, *Prentice Hall.*

#### **PARTICIPATION IN RESEARCH PROJECTS & INDUSTRIAL CONTRACTS**

##### **PhD Candidate**

1. “Optimization, quality control and construction of catalytic converters and soot traps”

**Source of Funding:** Ministry of Development, GSRT, EPET II call

**Budget:** 49672 €      **Duration:** 02/1995 – 12/1997      **Role in the Project:** PhD Candidate

2. “Electrochemical activation of methane using solid oxide membranes”

**Source of Funding:** European Union, Joule II call

**Budget:** 341428 €      **Duration:** 11/1992 – 05/1996      **Role in the Project:** PhD Candidate

##### **Post-Doc Researcher**

3. “Hydrogenation of carbon dioxide with the aid of proton conductive membranes”

**Source of Funding:** Ministry of Development, GSRT, PAVE 1998 call

**Budget:** 24300 €      **Duration:** 01/1999 – 12/2000      **Role in the Project:** Post-Doc

4. “Production of silicon carbide thin films with electrochemical vapour deposition”

**Source of Funding:** Ministry of Development, GSRT, PENED 1999 call

- Budget:** 54500 €      **Duration:** 01/2000 – 07/2001      **Role in the Project:** Post-Doc
5. “Hydrogen in oxide systems – fundamentals and promising applications”  
**Source of Funding:** European Union, INTAS call  
**Budget:** 6830 €      **Duration:** 04/2000 – 04/2002      **Role in the Project:** Post-Doc
6. “Catalytic abatement of N<sub>2</sub>O and NO<sub>x</sub> from combustion power plants”  
**Source of Funding:** European Union, FP5, ENERGY call  
**Budget:** 250000 €      **Duration:** 2002 – 2005      **Role in the Project:** Post-Doc
7. “Ceramic membranes for hydrogen separation”  
**Source of Funding:** European Union, FP6, GROWTH call  
**Budget:** 346500 €      **Duration:** 01/2002 – 12/2005      **Role in the Project:** Post-Doc
8. “Ammonia synthesis at atmospheric pressure”  
**Source of Funding:** Ministry of Development, GSRT, PENED 2001 call  
**Budget:** 88050 €      **Duration:** 12/2002 – 11/2005      **Role in the Project:** Post-Doc
9. “Establishment of a spin-off for the development of seawater desalination plants with the use of renewable energy”  
**Source of Funding:** Ministry of Development, GSRT, PRAXE 2001 call  
**Budget:** 44000 €      **Duration:** 11/2003 – 10/2004      **Role in the Project:** Post-Doc
10. “Synthesis of ammonia at atmospheric pressure using water”  
**Source of Funding:** Industrial contract with HONDA R&D Europe  
**Budget:** 35200 €      **Duration:** 09/2003 – 03/2004      **Role in the Project:** Post-Doc

**Lecturer, Dept. of Mechanical Engineering, UoWM**

11. “Development of solid oxide fuel cells for the direct electrochemical oxidation/dehydrogenation of hydrocarbons”  
**Source of Funding:** Ministry of Education & Religious Affairs, EPEAEK, ARCHIMEDES call  
**Budget:** 6000 €      **Duration:** 2005 – 2007      **Role in the Project:** UoWM group leader
12. “Hydrogen production in solid electrolyte membrane reactors”  
**Source of Funding:** Ministry of Education & Religious Affairs, EPEAEK, PYTHAGORAS call  
**Budget:** 85000 €      **Duration:** 2005 – 2008      **Role in the Project:** UoWM group leader
13. “Catalytic and electrocatalytic abatement of nitrogen oxides with the simultaneous oxidation of hydrocarbons in power plants flue gases”  
**Source of Funding:** Ministry of Development, GSRT, PENED 2003 call  
**Budget:** 115250 €      **Duration:** 2005 – 2008      **Role in the Project:** Project Coordinator
14. “Development and application of novel bi-metallic anodic electrodes in direct hydrocarbon fuel cells”  
**Source of Funding:** Ministry of Development, GSRT, S&T cooperation between Non EU countries call  
**Budget:** 65000 €      **Duration:** 2006 – 2008      **Role in the Project:** Project Coordinator
15. “Investigation of micro-scale mechanisms in the gas diffusion layer of the proton exchange membrane fuel cell”  
**Source of Funding:** Ministry of Development, GSRT, S&T cooperation between Non EU countries call  
**Budget:** 65000 €      **Duration:** 2006 – 2008      **Role in the Project:** UoWM group leader
16. “A combined biomass pyrolysis–SOFC process for the simultaneous generation of gas/liquid biofuels and energy”  
**Source of Funding:** Ministry of Development, GSRT, S&T cooperation between Greece-Cyprus  
**Budget:** 17500 €      **Duration:** 2006 – 2008      **Role in the Project:** UoWM group leader
17. Catalysis: A vital tool for sustainable energy production”  
**Source of Funding:** Ministry of Development, GSRT, People Networks call  
**Budget:** 5000 €      **Duration:** 2006 – 2008      **Role in the Project:** UoWM group leader
18. “Feasibility study for the development of energy crops in eastern Crete in order to produce biofuels or for the co-generation of power”, Industrial contract with OANAC (Project coordinator).  
**Source of Funding:** Industrial contract with OANAC  
**Budget:** 7000 €      **Duration:** 2006      **Role in the Project:** Project Coordinator
19. “Development of a combined biomass anaerobic digestion – PEMFC pilot plant”, Sub-contracting with the Environmental Centre of Kozani Prefecture (Project coordinator).  
**Source of Funding:** Subcontractor of KEPE Kozanis, Interreg, SMART call  
**Budget:** 85000 €      **Duration:** 2007      **Role in the Project:** UoWM group leader

**Assistant Professor, Dept. of Mechanical Engineering, UoWM**

20. “Simultaneous production of hydrogen and C<sub>2</sub>'s hydrocarbons in solid oxide membrane reactors”  
**Source of Funding:** European Union, ERANET, ACENET call  
**Budget:** 120000 €      **Duration:** 2008 – 2011      **Role in the Project:** Researcher of CERTH/CPERI
21. “BIOCLUS-Developing Innovation and Research Environment in five European Regions in the field of Sustainable Use of Biomass Resources”  
**Source of Funding:** European Union, FP7, REGIONS call

- Budget:** 345000 €      **Duration:** 2010 – 2013      **Role in the Project:** Project Coordinator
22. “Direct hydrocarbon micro-Solid Oxide Fuel Cell (m-SOFC)”  
**Source of Funding:** Fulbright Foundation  
**Budget:** 6000 \$      **Duration:** 2010 (3 months)      **Role in the Project:** Research scholar
23. “Development of proton conducting SOFCs for the co-generation of electrical/thermal power and chemicals”, IRAKLITOS II, Greek Ministry of Education and Lifelong Learning (Project coordinator).  
**Source of Funding:** Ministry of Education & Life Long Learning, IRAKLITOS II call  
**Budget:** 42000 €      **Duration:** 2011 – 2014      **Role in the Project:** Project Coordinator
24. “Training program for undergraduate students in the Dept. of Mechanical Engineering at the UoWM”  
**Source of Funding:** Ministry of Education & Life Long Learning  
**Budget:** 147492,72 €      **Duration:** 2009 – 2012      **Role in the Project:** Project Coordinator
25. “Cooperation with Tropical – Green Technologies SA for the simulation of transport phenomena in natural gas and biogas fed SOFCs”  
**Source of Funding:** Ministry of Education and Life Long Learning, Innovation Coupons call  
**Budget:** 7000 €      **Duration:** 2011      **Role in the Project:** Project Coordinator
26. “Efficient conversion of coal to electricity – Direct Coal Fuel Cells (DCFC)”  
**Source of Funding:** European Union (FP7), Research Fund for Coal and Steel  
**Budget:** 400000 €      **Duration:** 2011 - 2014      **Role in the Project:** UoWM leader
27. “H<sub>2</sub> production from H<sub>2</sub>S decomposition in micro-structured proton-conducting solid oxide membrane reactors”  
**Source of Funding:** European Union, Black Sea ERANET call  
**Budget:** 120000 €      **Duration:** 2012 – 2015      **Role in the Project:** Project Coordinator
28. “Development of novel catalyst composites via the synergy of structure and surface promoters for the simultaneous abatement of Nitrogen (NO<sub>x</sub>) and Nitrous (N<sub>2</sub>O) oxides”  
**Source of Funding:** Ministry of Education and Life Long Learning, THALIS call  
**Budget:** 598000 €      **Duration:** 2011 – 2015      **Role in the Project:** Project Coordinator
29. “Execution of the research project entitled novel anodes for solid electrolyte membrane reactors and their applications in solid oxide fuel cells”  
**Source of Funding:** Contract with King Abdulaziz City for Science & Technology  
**Budget:** 53333 \$      **Duration:** 2011 – 2013      **Role in the Project:** Researcher of CERTH/CPERI
30. “Ammonia synthesis from steam and nitrogen at atmospheric pressure: The electrochemical approach”  
**Source of Funding:** General Secretariat for Research & Technology, Greek Ministry of Education  
**Budget:** 2500000 €      **Duration:** 2012 – 2015      **Role in the Project:** Researcher of CERTH/CPERI
31. “CO<sub>2</sub> and H<sub>2</sub>O toward methanol synthesis at atmospheric pressure in co-ionic electrochemical membrane reactors”  
**Source of Funding:** CAPITA ERANET  
**Budget:** 150000 €      **Duration:** 2013 – 2015      **Role in the Project:** Researcher of CERTH/CPERI
32. “Solid state ammonia synthesis (SSAS) in tubular ceramic protonic reactors”  
**Source of Funding:** CAPITA ERANET  
**Budget:** 150000 €      **Duration:** 2016 – 2017      **Role in the Project:** Researcher of CERTH/CPERI

#### FELLOWSHIPS - AWARDS

- 1995 – 1998** Undergraduate and Post-graduate scholarships from CPERI/CERTH.  
**1998** Post-graduate scholarship from the General Secretariat of Research & Technology (GSRT).  
**2010** Fulbright research scholar at MIT  
**2015** Award by the University of Western Macedonia for Innovative Research in 2012-2014

#### SCIENTIFIC ARTICLES WRITTEN BY OTHERS ABOUT MY RESEARCH

1. “Low Pressure NH<sub>3</sub> Reported”, Peter Fairley, *Chemical Week*, October 7, p41 (1998).
2. “Perspectives: Haber for the scrapheap”, *Chemistry in Britain*, 35(1), 16 (1999).
3. “Making ammonia”, S. Reucroft and J. Swain, *Boston Globe*, October 19, (1998).
4. “Ammoniak-Synthese bei weniger Druck”, *Berliner Morgenpost*, October 6, (1998).
5. “New method to produce ammonia”, *Agelioforos Sunday Ed.*, November 1<sup>st</sup> (1998).
6. “Ammonia with a new method”, *Patris*, January 12<sup>th</sup> (1999).
7. “Maybe we can change the way to produce ammonia”, *IMERISIA*, December 13<sup>th</sup> (2003).

#### INVITED PRESENTATIONS

1. “Electrochemical synthesis of ammonia at atmospheric pressure and low temperatures”, invited lecturer, on Center for Atomic-scale Materials Physics (CAMP), Denmark, March 10, 2000.
2. “Technological applications of solid state proton conductors”, invited lecturer, on EU/NORDIC Workshop on solid state protonic conductor, Geilo Norway, March 20-25, 2001.

3. "High temperature proton conducting solid electrolyte membrane reactors: Current experience and perspectives in heterogeneous catalysis and chemical cogeneration", 2<sup>nd</sup> Nordic Seminar on Functional Energy Related Materials, Kongsberg, Norway, April 12-15, 2010.
4. "Power generation in a bio-oil fed SOFC using Cu-CeO<sub>2</sub> as anode", Hydrogen Research at the Greek-Bulgarian Border Region, Thessaloniki, Greece, October 17, 2012.
5. "Carbon to electricity in solid oxide fuel cells: effect of feedstock characteristics and process parameters", Gemini FORENT seminar on "High-temperature solid-state electrochemistry", Oslo, Norway, October 23, 2014, University of Oslo, Forskningsparken, meeting room "Agora" at FERMiO.
6. "H<sub>2</sub>S in Black Sea: Turning an environmental threat to an opportunity for clean energy production. Progress achieved in the framework of Black Sea ERANET, H<sub>2</sub>S-PROTON project". International Center for Black Sea Studies (ICBSS), 8<sup>th</sup> International Black Sea Symposium on "Science, Technology & Innovation in Black Sea: Moving Forward", Athens, Greece, November, 12-13, 2015, Hotel Amalia.
7. "Biomass power opportunities in agriculture and for sustainable energy generation", Event in the framework of The IPA Cross-Border Greece-Albania Programme for the energy exploitation of biomass (2007-2013), Kastoria, Greece, November 26, 2015, Hotel Esperos Palace.
8. "Direct coal fuel cells: An efficient and environmental friendly way to directly convert solid fuels to electricity", 1st Mini Conference on Emerging Engineering Applications, Chalkida, Greece, November 26-27, 2015, Technological Educational Institute of Stereas Elladas.

#### EXTERNAL EXAMINER IN PHD THESES

1. "Novel electrocatalytic membrane for low temperature ammonia synthesis", Sujitra Klinsrisuk, University of St. Andrews, 20-07-2010.
2. "Bifunctional activation and heterolytic cleavage of ammonia and dihydrogen by silica-supported tantalum imido amido complexes and relevance to the dinitrogen cleavage mechanism by tantalum hydrides", Yasemin Kaya, University of Claude Bernard – Lyon 1, Lyon 25-03-2013.
3. "Low temperature oxidation of hydrocarbons using an electrochemical reactor", Davide Ippolito, Denmark Technical University (DTU), Roskilde, Denmark 04-07-2013.
4. "Oxygen electrodes for ceramic fuel cells with proton and oxide ion conducting electrolytes", Ragnar Strandbakke, University of Oslo, Oslo, Norway 24-10-2014
5. "Electrochemical promotion of novel catalysts with alkaline conductors for hydrogen production from methanol", Jesus Gonzalez Cobos, University of Castilla La Mancha, Ciudad Real, Spain 22-07-2015 (External Examiner)

#### REVIEWER IN SCIENTIFIC JOURNALS/CONFERENCES

- |   |  |
|---|--|
| 1. SPRINGER Publishing                                  | 2. Applied Catalysis B: Environmental                            |
| 3. Industrial & Engineering Chemistry Research          | 4. Water, Air & Soil Pollution                                   |
| 5. Solid State Ionics                                   | 6. International Journal on Hydrogen Energy                      |
| 7. 14 <sup>th</sup> International Congress on Catalysis | 8. Polish Journal of Environmental Studies                       |
| 9. Journal of Hazardous Materials                       | 10. Electrochimica Acta  |
| 11. Chemical Engineering Communications                 | 12. Journal of Materials Science                                 |
| 13. Journal of Catalysis                                | 14. 9 <sup>th</sup> Europ. Symp. Electrochemical Engineering     |
| 15. Energy & Fuels                                      | 16. Intl. Conference on Hydrogen Production                      |
| 17. Journal of Electrochemical Society                  | 18. Fuel Processing Technology                                   |
| 19. Intl. Journal of Chemical Reactor Engineering       | 20. Energy & Environmental Science                               |
| 21. Journal of Solid State Electrochemistry             | 22. Catalysis Surveys from Asia                                  |
| 23. Fuel Cells  | 24. Chemical Engineering and Processing: Process Intensification |
| 25. Energy Conversion & Management                      | 26. International Journal of Global Warming                      |
| 27. Journal of the Energy Institute                     | 28. Fuel   |

#### REVIEWER IN RESEARCH FUNDING AGENCIES

1. US Department of Agriculture (Small Business Innovation Research)
2. EU, ISTC projects
3. Greek Ministry of Development, General Secretariat of Research & Technology (GSRT)
4. Engineering and Physical Sciences Research Council (EPSRC)
5. Research Committee of the Technical University of Crete
6. European Commission - Fuel Cells and Hydrogen Joint Undertaking (Evaluator, Rapporteur)
7. Greek Ministry of Education
8. Epirus Region Authorities
9. M-ERA.NET Transnational Calls for 2013, 2014, 2015

10. ERANETMED (2015) program funded by the 7<sup>th</sup> EU RTD Framework Programme and the Mediterranean Partner Countries on Renewable Energies, Water Resources and their connections for the Mediterranean Region
11. The Research Council of Norway, Activity NANO2021

#### SCIENTIFIC & ADMINISTRATIVE ACTIVITIES

1. Departmental coordinator in the *ERASMUS/SOCRATES* program (2003 – present).
2. Departmental coordinator in the **Training** program for undergraduates (2008 – present)
3. Scientific committee of the **5<sup>th</sup> Panhellenic Symposium of Chemical Engineers** (2004).
4. Scientific committee of the **10<sup>th</sup> Panhellenic Symposium on Catalysis** (2008)
5. Scientific committee of the **2<sup>nd</sup> International Conference on Environmental Management, Engineering, Planning and Economics** (2008).
6. Organizing committee of the **2<sup>nd</sup> Panhellenic Symposium on Hydrogen Technologies** (2005).
7. Organizing committee of the **2<sup>nd</sup> Panhellenic Symposium on Alternative Fuels and Biofuels** (2007).
8. Deputy coordinator of the **Fuel Cells for Stationary & Mobile Applications working group, Hellenic Hydrogen Platform** (2007 – Present).
9. Greek representative in **COST Action 543 “Bioethanol processing in fuel cells”** (2008 – Present).
10. BOD member of HELEXPO SA (2010 – Present)
11. Scientific committee of the **11<sup>th</sup> Panhellenic Symposium on Catalysis** (2010)
12. Organizing committee of the 2011 International Conference on Hydrogen Production (ICH2P-11)
13. Scientific committee of the **12<sup>th</sup> Panhellenic Symposium on Catalysis** (2012)
14. Organizing committee of the **13<sup>th</sup> Panhellenic Symposium on Catalysis** (2014)
15. Deputy member of the Research Committee of the University of Western Macedonia (05/2015 – To date)
16. Chairman of the Students Affairs Committee (05/2015 – To date)
17. Chairman of the newly founded Department of Environmental Engineering at the University of Western Macedonia (6/2015 – To date)

#### SOCIETY MEMBERSHIPS

1. Technical Chamber of Greece (1997).
2. Vice-Chairman, **North-Western Branch of Hellenic Association of Chemical Engineers** (2000 – 2005).
3. Member of the **Technical Education Committee** of the Technical Chamber of Greece (2003 – 2006).
4. Chairman, **North-Western Branch of Hellenic Association of Chemical Engineers** (2005 - 2007).
5. Vice-Chairman, **Hellenic Hydrogen Society** (2006 – present).
6. Vice-Chairman, **Society of Faculty Members in the University of Western Macedonia** (2006 – 2008).
7. Member of the **Panhellenic Council of the Technical Chamber of Greece** (2006 – present).
8. Member of Fulbright Scholars Alumni (2011 – present).