



## GEORGE E. MARNELLOS

### Aristotle University of Thessaloniki, Department of Chemical Engineering

University Campus, Dept. of Chemical Engineering, Building E13, 54124 Thessaloniki, Greece

Tel.: +30 2310 996165, e-mail: [gmarnellos@cheng.auth.gr](mailto:gmarnellos@cheng.auth.gr)

### Centre for Research & Technology Hellas, Chemical Process & Energy Resources Institute

6<sup>th</sup> km. Charilaou – Thermi Rd., 57001 Thermi, Thessaloniki, Greece

Tel.: +30 2310 498120, e-mail: [marnel@certh.gr](mailto:marnel@certh.gr)

#### SUMMARY

Dr. Marnellos graduated the Dept. of Chemical Engineering at Aristotle University of Thessaloniki (AUTH) in 1995. He obtained his PhD in 1999 from the AUTH, and a Master degree in Business Administration from the Macedonia University (Thessaloniki) in 1998. From 2003 till 2023, he served as a faculty member in the Department of Mechanical Engineering at the University of Western Macedonia (UoWM - Kozani, Greece). Today, he is a Professor in the Department of Chemical Engineering at AUTH and he is also an affiliated faculty member in the Chemical Process & Energy Resources Institute (CPERI) at the Centre for Research & Technology Hellas (CERTH). During 2016-2019, He was the Vice Rector for Financial Planning, Infrastructure & Development and the Chairman of Research Committee at UoWM. He is co-author of 96 papers in international scientific journals, 35 in international conference proceedings, 92 in national conference proceedings and 2 book chapters, concerning heterogeneous catalysis and solid state electrochemistry in several energy and environmental applications including hydrogen technologies and energy storage of intermittent excess RES power. 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. He is conducting high-level fundamental and applied research in the fields of hydrocarbons processing (natural gas valorisation, production of olefins), hydrogen (iso-octane and bioethanol reforming, steam and H<sub>2</sub>S electrolysis, electrochemical membrane reactors for hydrogen generation and separation) and fuel cell (direct hydrocarbon and solid carbon high temperature ceramic fuel cells) technologies, CO<sub>2</sub> utilization (hydrogenation to methanol and methane, electrolysis toward CO), environmental catalysis (NO<sub>x</sub>, VOCs, etc) and biomass to energy conversion technologies. He has participated in extended European and national research consortiums. In this context, he had the opportunity to develop and expand a valuable network of collaborators both in Greece and around the globe, including worldwide appreciated academic and research institutions and well-known companies. Prof. Marnellos published work has been acknowledged with more than 3100 citations (Google Scholar), 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 (European Commission – DG Move, Fuel Cell and Hydrogen Joint Undertaking, Clean Hydrogen Joint Undertaking, CINEA, Research Council of Norway, M-ERANET, etc) 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. In November 2015, he was awarded by UoWM a prize for Innovative Research in 2012-2014. From 2016 till 2023, he was the chairman of the Cluster of Bioeconomy and Environment in Western Macedonia (CluBE) and since 2020 he is associate editor of the "Hydrogen" journal of MDPI Editions.

#### BRIEF PRESENTATION

Publications in Journals	<b>96</b>	Citations	<b>Scopus &gt;2500, Scholar &gt;3100</b>
Intl. Conferences' Proceedings	<b>35</b>	H-index	<b>Scopus = 29, Scholar = 30</b>
Natl. Conferences' Proceedings	<b>92</b>	PhD Theses Supervision	<b>9 (completed), 3 (running)</b>
Patents	<b>2</b>	Invited Presentations	<b>8</b>
Chapters in Books	<b>2</b>	Reviewer in Journals	<b>35</b>
Translation of Text Books	<b>3</b>	Reviewer Funding in Agencies	<b>14</b>

#### CURRENT APPOINTMENT(S)

<b>09.2023 - Today</b>	<b>Faculty Member (Professor)</b> Aristotle University of Thessaloniki, Faculty of Engineering, Dept. of Chemical Engineering, Greece
<b>04.2003 - Today</b>	<b>Affiliated Faculty Member</b> CERTH/CPERI, Laboratory of Process Systems Design and Implementation, Greece
<b>10.2019 - Today</b>	<b>Contracted Lecturer</b> Hellenic Open University, School of Science & Technology, Greece

#### PREVIOUS APPOINTMENT(S)

<b>04.2003 – 08.2023</b>	<b>Faculty Member (since 03/2018 as Professor)</b> UoWM, Faculty of Engineering, Department of Mechanical Engineering, Greece
<b>03.2017 – 05.2023</b>	<b>Chairman of Cluster of Bio-economy &amp; Environment of Western Macedonia (CluBE)</b>
<b>10.2016 - 08.2019</b>	<b>Vice Rector of Financial Planning, Infrastructure and Development, UoWM</b>
<b>10.2016 - 08.2019</b>	<b>Chairman of Research Committee, UoWM</b>
<b>06.2015 - 12.2016</b>	<b>Head of Department</b>

	UoWM, Faculty of Engineering, Department of Environmental Engineering, Greece
<b>10.2011 - 09.2014</b>	<b>Contracted Lecturer</b>
	International Hellenic University (IHU), School of Science & Technology, Greece
<b>01.2011 - 03.2011</b>	<b>Fulbright Research Scholar</b>
	Massachusetts Institute of Technology (MIT), Dept. of Mechanical Engineering, USA
<b>10.2009 - 09.2016</b>	<b>Contracted Lecturer</b>
	Hellenic Open University (HOU), School of Science & Technology, Greece
<b>07.1999 - 03.2003</b>	<b>Post-Doc Researcher</b>
	CERTH, CPERI, Laboratory of Process Systems Design and Implementation, Greece

## EDUCATION

<b>09.1995 - 06.1999</b>	PhD in Chemical Engineering, AUTH, Dept. of Chemical Engineering, Greece <b>PhD Thesis:</b> “Study of catalytic oxidation and hydrogenation reactions with the aid of oxygen and proton conducting solid electrolyte membrane reactors”
<b>10.1996 - 10.1998</b>	Master in Business Administration, University of Macedonia, Greece <b>Master Thesis:</b> “The method of Hazard Analysis of Critical Control Point (HACCP) and its implementation in the Greek food industry”
<b>10.1989 - 04.1995</b>	PhD in Chemical Engineering, AUTH, Dept. of Chemical Engineering, Greece <b>Thesis:</b> “Study of the electrochemical activation of methane over a perovskite-type oxide catalyst”

## TEACHING ACTIVITIES

<b>2023 – Today</b>	<b>AUTH, Faculty of Engineering, Department of Chemical Engineering, Greece</b> Courses: Physical Processes II, Special Topics in Thermodynamics,
<b>2003 – 2023</b>	<b>UoWM, Faculty of Engineering, Department of Mechanical Engineering, Greece</b> Courses: Chemistry, Environmental Technology, Unit Operations, Environmental Chemistry, Special Issues on Pollution Control Technologies, Special Issues on Energy Conversion Technologies, Supervisor of Diploma (> 100 students) and Doctoral Theses (7 completed, 4 running)
<b>2015 – Today</b>	<b>UoWM, Faculty of Engineering, Department of Chemical Engineering, Greece</b> Chemical Reaction Engineering, Air Quality Engineering
<b>2019 – Today</b>	<b>HOU, School of Science &amp; Technology, MSc on Environmental Catalysis for Pollution Abatement and Clean Energy Production</b> Courses: Clean Energy Production, Supervision of Master Thesis (1)
<b>2017 – 2019</b>	<b>UoWM, MSc on Engineering and Management of Energy Resources</b> Courses: Oil and Gas Engineering, Control Pollution Technologies in Power Generation, Renewable Energy Sources, Supervision of Master Theses (5)
<b>2011 – 2014</b>	<b>International Hellenic University, MSc on Energy Systems</b> Courses: Introduction to Energy Technology Systems, Supervision of Master Thesis (3)
<b>2009 – 2016</b>	<b>HOU, School of Science &amp; Technology, MSc on Catalysis &amp; Environmental Protection</b> Supervision of Master Theses (10) terogeneous Catalysis, Introduction to Energy Technology Systems (Master level),

### Completed PhD 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. “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 (completed on 06/2017).
7. “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 (completed on 05/2018)
8. “Design and evaluation of advanced CeO<sub>2</sub>-based transition metal catalytic composites for CO<sub>2</sub> activation by renewable H<sub>2</sub> toward synthetic CH<sub>4</sub> and CO”, **G. Varvoutis**, UoWM, Greece (20-05-2022)

9. “Comparative analysis of lignite, olive kernel and as-produced chars gasification: Effect of gasifying agent, thermal treatment temperature and catalysts addition”, **A. Lambropoulos**, UoWM (completed on 12/2022).

#### **Running PhD Theses**

10. “Urban pollution and biological effects - Effect of environmental derivatives on standard biological systems”, **I. Tzagaroulaki**, UoWM (started on 2017).
11. “Development of computational software for the life cycle analysis of emerged energy technologies in the forthcoming post-coal era”, **G. Kardaras**, UoWM (started on 2019)
12. “Development and evaluation of multi-functional nano-structured catalyst composites for the effective and selective hydrogenation of CO<sub>2</sub> to light olefins”, **E. Mantela** (Started on 2020)

#### **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, Electrodics.
- 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.
- CO<sub>2</sub> utilization approaches.
- Efficient energy storage of intermittent RES power to chemical energy

#### **RESEARCH ACHIEVEMENTS**

Prof. Marnellos has been involved in a number of significant research contributions:

1. **Electrochemical aided shift of equilibrium limited reactions** – Prof. Marnellos first reported [Marnellos and Stoukides, Science 282 (1998) 98] a new method based on H<sup>+</sup> conducting solid electrolyte reactors to synthesize ammonia at atmospheric pressure bypassing the thermodynamic restrictions, limiting equilibrium conversion. This pioneering work has opened new orisons for similar chemical processes (CH<sub>3</sub>OH synthesis) as well as for the un-resolved aspects of nitrogen fixation.
2. **NO<sub>x</sub> and N<sub>2</sub>O abatement using water as a hydrogen source** – Prof. Marnellos developed a new concept to abate NO<sub>x</sub> and N<sub>2</sub>O to N<sub>2</sub> using a double chamber H<sup>+</sup>-SEMR steam electrolysis cell [Kalimeri, 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<sub>2</sub>O is used as a H<sub>2</sub> source. Moreover, as a side effect of steam electrolysis, pure O<sub>2</sub> can be produced on the anode.
3. **Hydrogen production from H<sub>2</sub>S/H<sub>2</sub>O mixtures** – Prof. Marnellos first reported a novel process based on micro-structured proton conducting ceramic membrane reactors to simultaneously electrolyze H<sub>2</sub>S and H<sub>2</sub>O to pure H<sub>2</sub> in a single device. This concept can be implemented in Black Sea waters and geothermal springs and it can be considered as an efficient energy storage approach if powered by RES [Kraia, Sol. St. Ionics, 306 (2017) 31; Ipsakis, Renewable Energy, 125 (2018) 806; Kraia, Intl. J. Hydrogen Energy, 44 (2018) 9753].
4. **Structure/surface chemistry-performance correlation** – Significant advancements are achieved when the performance of catalysts/electrodes is correlated with their structure and surface chemistry. With the aid of advanced characterization techniques this route has been followed by the group in several applications [Al-Musa, Intl. J. Hydrogen Energy, 39 (2014) 19541; Konsolakis, Catalysts 6 (2016) 39].
5. **Development of active nano-catalysts for CO<sub>2</sub> hydrogenation toward added value chemicals and fuels** – Recent efforts were targeted to the development of active transition metal catalysts [Diez-Ramirez, J. CO<sub>2</sub> Utilization, 21 (2017), 562; Konsolakis, Nanomaterials, 9 (2019) 1739] and Au nanocatalysts [Vourros, J. CO<sub>2</sub> Utilization, 19 (2017) 247; Kyriakou, Catal. Commun., 98 (2017), 52] for the effective activation of CO<sub>2</sub> by its hydrogenation with renewable hydrogen toward methane and CO.
6. **Electrochemical reactor for pure H<sub>2</sub> generation from coal** – A new concept to generate pure H<sub>2</sub> in a single device by using abundant solid fuels was introduced [Kyriakou, J. Membrane Science, 553 (2018) 163]. In a proton conducting electrochemical membrane reactor, pure hydrogen is generated at the anode compartment through coal steam gasification and is simultaneously separated to cathode.
7. **Coal aided steam electrolysis** – A novel and efficient concept was introduced to lower the energy requirements of cathodic H<sub>2</sub>O electrolysis in high temperature Solid Oxide Electrolysis Cells using lignite coal at the anode compartment. Gibbs free energy requirements for H<sub>2</sub>O electrolysis are lowered by the consumption of O<sup>2-</sup> by the coal [Athanasίου et al., Intl. J. Hydrogen Energy, 44 (2019) 22770].

#### **LIST OF PUBLICATIONS**

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

- A1. “Electrode polarization and electrical properties of the 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> / Yttria 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. Athanasiou, 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. Athanasiou, 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  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\alpha}$  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  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\alpha}$  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).
- 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).
- 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  $\text{Ru}/\text{Al}_2\text{O}_3$  catalysts for  $\text{N}_2\text{O}$  decomposition and/or reduction in  $\text{O}_2$  rich atmospheres and in the presence of  $\text{NO}_x$ ,  $\text{SO}_2$  and  $\text{H}_2\text{O}$ ”, V.G. Komvokis, G.E. Marnellos, I.A. Vasalos and K.S. Triantifyllidis. *Applied Catalysis B: Environmental*, **89(3-4)**, 627-634 (2009).
- A30. “ $\text{N}_2\text{O}$  abatement over  $\gamma\text{-Al}_2\text{O}_3$  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 ( $\text{H}^+$ -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).
- 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).
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## **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-α</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*.
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- 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*.
- B20. “Direct conversion of biomass to electricity in a Co-CeO<sub>2</sub>/YSZ/Ag solid oxide fuel cell”, N. Kaklidis, Th. Agathocleous, M. Neophytou, G.E. Marnellos and M. Konsolakis. *CEMEPE and SECOTOX CONFERENCE 2017, Thessaloniki, Greece, June 25-28, 2017*.
- B21. “Improved electrochemical performance of a direct carbon fuel cell by catalyst and/or carbonates infusion into fuel feedstock: The case of Bituminous coal”, N. Kaklidis, R. Strandbakke, A. Arenillas, A.J. Menéndez, M. Konsolakis, G.E. Marnellos. 9th International Conference on Hydrogen Production (ICH2P-2018), Zagreb, Croatia, July 16-19, 2018.
- B22. “Hydrogen production by H<sub>2</sub>S decomposition over ceria supported transition metal (Co, Ni, Fe and Cu) catalysts”, Tz. Kraia, M. Konsolakis, N. Kaklidis, G.E. Marnellos. 9th International Conference on Hydrogen Production (ICH2P-2018), Zagreb, Croatia, July 16-19, 2018.
- B23. “Effect of Greek lignite pyrolysis protocols on the physicochemical properties and gasification reactivity of as-produced chars”, Nikolaos Kaklidis, Athanasios Lampropoulos, Eleni Papista, Vassilios Binas, Michalis Konsolakis, George E. Marnellos. 10<sup>th</sup> International Conference on Hydrogen Production (ICH2P-2019), Cluz-Napoca, Romania, May 15-17, 2019.
- B24. “Highly active and stable Cobalt/Ceria mixed oxide catalysts for H<sub>2</sub> production by H<sub>2</sub>S decomposition in H<sub>2</sub>O excess conditions”. Tzoulia Kraia, Michalis Konsolakis, George E. Marnellos. 10<sup>th</sup> International Conference on Hydrogen Production (ICH2P-2019), Cluz-Napoca, Romania, May 15-17, 2019.
- B25. “Rational design of ceria-based nanocatalysts for CO<sub>2</sub> hydrogenation to value-added products”, M. Konsolakis, M. Lykaki, S. Stefa, S.A.C. Carabineiro, G. Varvoutis, E. Papista, G.E. Marnellos. 2019 International Conference on Materials and Nanomaterials (MNs-19), Paris, France, July 17-19, 2019.
- B26. “Feasibility of CO<sub>2</sub> conversion to methanol: the case of upgrading a municipal solid waste (MSW) power plant”, C. Athanasiou, S. Karavasili, G.E. Marnellos, S. Papaefthimiou, M. Konsolakis. 4<sup>th</sup> Annual Symposium of Hellenic Association of Energy Economics (HAEE), Athens, Greece, May 6-8, 2019.
- B27. “Turning CO<sub>2</sub> emissions to CH<sub>4</sub> by means of green H<sub>2</sub> and novel catalytic materials” M. Konsolakis, S. Papaefthimiou, D. Ipsakis, M. Lykaki, S. Stefa, G. Varvoutis, G.E. Marnellos. 5<sup>th</sup> HAEE Energy Transition Symposium, Athens, 30 September – 2 October, 2020.
- B28. “Techno-economic assessment of a carbon neutral CCU circular approach based on RES-H<sub>2</sub> and cement - CO<sub>2</sub> emissions toward synthetic natural gas generation”, D. Ipsakis, G. Varvoutis, A. Lampropoulos, G.E. Marnellos, S. Papaefthimiou, M. Konsolakis. International Congress of Chemical and Process Engineering, CHISA 2021, Virtually 15-18 March 2021.
- B29. “An alternative pathway toward urban sewage sludge management: Turning a problem to an opportunity to generate H<sub>2</sub> fuel for transportation” E. Papista, N. Ntavos, Y. Fallas and G.E. Marnellos. 29<sup>th</sup> European Biomass Conference & Exhibition (EUBCE 2021), 26-29 April, 2021.
- B30. “CO<sub>2</sub> gasification of olive kernel fuel: Effect of fuel thermal treatment and carbonates addition on syngas production”, A. Lampropoulos, M.A. Montes-Morán, J. Angel Menendez, V. Binas, M. Konsolakis, G.E. Marnellos. 29<sup>th</sup> European Biomass Conference & Exhibition (EUBCE 2021), 26-29 April, 2021.



- B31. “A circular approach to upgrade cement-based CO<sub>2</sub> and renewable H<sub>2</sub>: Techno-economic analysis of SNG production”, Dimitris Ipsakis, Georgios Varvoutis, Athanasios Lambropoulos, Evridiki Mandela, Spiros Papaefthimiou, George E. Marnellos, Michalis Konsolakis. 24th Conference on Process Integration for Energy Saving and Pollution Reduction - PRES'21, Brno, Czech Republic 31.10-03.11, 2021
- B32. “Decarbonizing district heating in energy transition regions: novel biomass supply chains for conversion to Intermediate Bioenergy Carriers (IBC)”, G. Kardaras, Tz. Kraia, M. Bampaou, M. Christou, K.D. Panopoulos, G. Marnellos. 30<sup>th</sup> European Biomass Conference and Exhibition, Online & Marseille, France, 9-12 May, 2022
- B33. “Modeling and experimental study of olive kernel gasification in a 2 MWth BFB gasifier”, Athanasios Lampropoulos, George Varvoutis, Idoya Goñi, Raúl Pérez-Vega, Nikos Ntavos, Yannis Fallas, George E. Marnellos. 30<sup>th</sup> European Biomass Conference and Exhibition, Online & Marseille, France, 9-12 May, 2022
- B34. “Techno-economic analysis of a biomass-to-power sustainable system: The case of olive kernel utilization towards electricity and bio-fuels”, Athanasios Lampropoulos, Dimitrios Ipsakis, George Varvoutis, Evridiki Mandela, Michalis Konsolakis, George E. Marnellos, Costas Athanasiou. 4<sup>th</sup> Symposium on Circular Economy and Sustainability, 4thCESUST2023, Heraklion, Greece, June 19-21, 2023
- B35. “Catalysis for circular economy & environmental sustainability exemplified by CO<sub>2</sub> upgrade to value-added fuels via green hydrogen”, M. Lykaki, G. Varvoutis, D. Ipsakis, S. Papaefthimiou, G.E. Marnellos, M. Konsolakis. 4<sup>th</sup> Symposium on Circular Economy and Sustainability, 4thCESUST2023, Heraklion, Greece, June 19-21, 2023

### 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. Himmelblau, *Prentice Hall*.
2. “**Elements of Chemical Reaction Engineering**”, H. Scott Fogler, *Prentice Hall*.
3. “**Engineering Energy Storage**”, Odne Stokke Burheim, *Academic Press*.

### PARTICIPATION IN RESEARCH PROJECTS & INDUSTRIAL CONTRACTS

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
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
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
20. "Simultaneous production of hydrogen and C2'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
33. "Direct conversion of Biomass to Electricity in MED area via an internal catalytic gasification solid oxide fuel cell"  
**Source of Funding:** ERANET MED  
**Budget:** 40000 € **Duration:** 2017 – 2020 **Role in the Project:** UoWM leader
34. "Proton and oxygen co-ionic conductors for CO<sub>2</sub>/H<sub>2</sub>O co-electrolysis and intermittent RES conversion to methanol and other chemicals towards EU Sustainability – PROMETHEUS"  
**Source of Funding:** General Secretariat for Research & Technology, Greek-German bilateral S&T cooperation  
**Budget:** 286000 € **Duration:** 2018 – 2021 **Role in the Project:** Researcher of CERTH/CPERI
35. "Efficient conversion of Greek lignite and agricultural residues to electricity through catalyst-aided integrated gasification/SOFC and Direct Carbon and Fuel Cell processes – LIGBIO-GASOFC"  
**Source of Funding:** General Secretariat for Research & Technology, Research-Innovate-Create call  
**Budget:** 261548.69 € **Duration:** 2018 – 2021 **Role in the Project:** Coordinator at UoWM
36. "Rationale design and development of nano-structured catalysts for the CO<sub>2</sub> transformation to value-added products – NANOCO2"  
**Source of Funding:** General Secretariat for Research & Technology, Research-Innovate-Create call  
**Budget:** 182314.83 € **Duration:** 2018 – 2021 **Role in the Project:** CERTH/CPERI Leader
37. "Test of fuel additives in gasoline and diesel vehicles"  
**Source of Funding:** Industrial Contract with ELINOIL  
**Budget:** 16000,00 € **Duration:** 2020 – 2021 **Role in the Project:** Coordinator at UoWM
38. "Quality control of diesel fuels for automotive applications"  
**Source of Funding:** Industrial Contract with ELINOIL  
**Budget:** 12000,00 € **Duration:** 2020 – 2021 **Role in the Project:** Coordinator at UoWM
39. "Scalable technologies for bio-urban waste recovery - SCALIBUR"  
**Source of Funding:** Subcontractor of CluBE, H2020-SFS-2018-2020 Call, CE-SFS-25-2018: Integrated system innovation in valorizing urban biowaste (Grant Agreement: 817788)  
**Budget:** 20000,00 € **Duration:** 2020 – 2022 **Role in the Project:** Coordinator at UoWM
40. "Development of innovative nano-catalyst materials and reactors toward the efficient and selective hydrogenation of CO<sub>2</sub> to light olefins - NANOLEFINS"  
**Source of Funding:** Research-Innovate-Create call  
**Budget:** 224.150,00 € for UoWM **Duration:** 2022 – 2025 **Role:** Coordinator, UoWM
41. "A sustainable integrated route to convert waste plastics to H<sub>2</sub> and low carbon liquid fuels – SURPLAS"  
**Source of Funding:** REA – Marie Skłodowska-Curie Actions  
**Budget:** 169,326.72 € **Duration:** 2023 – 2025 **Role:** Supervisor, CERTH
42. "Nano-Engineered Co-Ionic Ceramic Reactors for CO<sub>2</sub>/H<sub>2</sub>O Electroconversion to Light Olefins – ECOLEFINS"  
**Source of Funding:** HORIZON-EIC-2022-PATHFINDEROPEN-01 (EIC Pathfinder Open 2022)  
**Budget:** 2519031.25 € (for CERTH 578500.00 €) **Duration:** 2023 – 2025 **Role:** Coordinator, CERTH

#### FELLOWSHIPS - AWARDS

- 2011** Fulbright research scholar at MIT  
**2015** Award by the University of Western Macedonia for Innovative Research in 2012-2014  
**2016** ERASMUS Academic Minister (European Association of ERASMUS Coordinators)

#### 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 lecture, on Center for Atomic-scale Materials Physics (CAMP), Denmark, March 10, 2000.
2. “Technological applications of solid state proton conductors”, invited lecture, 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. “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.
5. “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.
6. “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.
7. “FCH Technologies: Potential large implementation projects in Greece”, 5th Hellenic Forum for Science, Technology and Innovation. Workshop on Integrated, Innovative Renewable Energy – Hydrogen Systems and Applications. NCSR Demokritos, July 5, 2017, Athens.
8. “Remarkably active and stable Ni/CeO<sub>2</sub> nanorods for CO<sub>2</sub> methanation: Fundamental research to scaled up structured catalysts”, Plenary lecture at the 8<sup>th</sup> Meeting of the Energy Materials Discovery, Characterization and Application Group, June 19 – 21, 2023, Aviemore, Scotland, UK

#### 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
6. **“Assessment of a RES-based H<sub>2</sub> production-storage system towards a zero-emission cycling based transportation”**, Dimitrios Apostolou, Aarhus University, Department of Business Development and Technology (BTECH), Aarhus, Denmark 04-03-2021 (External Examiner)
7. **“Investigation of the surface chemistry of cermet electrodes during high-temperature CO<sub>2</sub> Electrolysis”**, Ding kai Chen, University of Strasbourg, Institute of Chemistry and Processes for Energy, Environment and Health (ICPEES), Strasbourg, France 15-12-2021 (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   |
| 29. Reaction Kinetics, Mechanisms and Catalysis         | 30. Renewable Energy   |
| 31. Journal of Agricultural Chemistry & Environment     | 32. Journal of Alloys and Compounds                              |
| 33. Catalysis Today                                     | 34. Applied Surface Science Advances                             |
| 35. Journal of Cleaner Energy Production                |  |

#### 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, 2016, 2017, 2018
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
12. CEF Transport: Connecting Europe Facility (2016-2017)
13. HFRI, Call for PhD Candidates (2018)
14. Natural Environment Research Council/UK Research and Innovation

#### ORGANIZING OF INTERNATIONAL CONFERENCES

1. Vice-Chairperson, **7<sup>th</sup> International Conference on Environmental Management, Engineering, Planning & Economics (CEMEPE), and SECOTOX conference**, May 19-24, 2019.
2. Scientific committee, **6<sup>th</sup> International Conference on Environmental Management, Engineering, Planning & Economics (CEMEPE), and SECOTOX conference**, June 25-30, 2017.
3. Organizing committee of the **2011 International Conference on Hydrogen Production (ICH2P-11)**
4. Scientific committee of the **2<sup>nd</sup> International Conference on Environmental Management, Engineering, Planning and Economics** (2008).

#### SCIENTIFIC & ADMINISTRATIVE ACTIVITIES

1. Departmental coordinator in the **ERASMUS/SOCRATES** program (2003 – 2015).
2. Departmental coordinator in the **Training** program for undergraduates (2008 – 2015)
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).
9. Greek representative in **COST Action 543 “Bioethanol processing in fuel cells”** (2008).
10. BOD member of HELEXPO SA (2010 – 2012)
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. Chairman of the Students Affairs Committee (05/2015 – 2016)
16. Chairman of the newly founded Department of Environmental Engineering at the University of Western Macedonia (6/2015 – 12/2017)
17. Vice Rector for Financial Planning, Infrastructure and Development (2016 – 2019)
18. Chairman of the Research Committee of the University of Western Macedonia (2016 – 2019)
19. Chairman of the Cluster of Bioenergy and Environment in Western Macedonia (2016 – To date)
20. Associate Editor of “Hydrogen” journal of MDPI Editions

#### SOCIETY MEMBERSHIPS

1. Technical Chamber of Greece (1997 – Today).
2. Hellenic Association of Chemical Engineers (1997 – Today)
3. Vice-Chairman, **North-Western Branch of Hellenic Association of Chemical Engineers** (2000 – 2005).
4. Chairman, **North-Western Branch of Hellenic Association of Chemical Engineers** (2005 – 2007).
5. Vice-Chairman, **Hellenic Hydrogen Society** (2006 – 2010).
6. Elected Member of the **Panhellenic Council of the Technical Chamber of Greece** (2006 – 2016; 2019 – Today).
7. Member of Fulbright Scholars Alumni (2011 – Today).
8. Member of the Hellenic Catalysis Society (2003 – Today)
9. Economic Chamber of Greece (2019 – Today)