

Prof. Sofoklis MAKRIDIS

Materials and Processes for Energy and Environmental Applications



Department of Environmental and Natural Resources Management
University of Patras

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CURRENT STATUS

Editor-in-Chief (Verizona & MDPI) and Editor (Scientific Reports at Nature Publishing Group, MSEB-Elsevier, Materials & Challenges-MDPI, Open Chemistry-DeGruyterOpen), Assistant Professor at the University of Patras, Greece, Head of the Energy-Matters Group, Third Bridge (ex CognitoLink), Lek Consultant: Specialist in Energy & Nanotechnology (Hydrogen-CO₂-Renewable Energy) and Origami Engineering (Composites-Materials Science). EU-Cost Actions: Management Committee in Energy, Materials, Biotechnology. EU-Horizon evaluator: Societal challenge 2.

RESEARCH & DEVELOPMENT INTERESTS

My research interests span the areas of nanocomposite materials and processes for energy and environmental applications through theoretical and experimental investigations. My research explores the CFD modeling & Design (hydrogen and Carbon Capture Storage & compression systems), materials materials: properties to systems performance and novel nanocomposites Mg-CNTs hybrid materials for efficient sorption characteristics and upscaling processes.

I have excellent links with high rank of research-academic and industrial environments: the Lawrence Berkeley National Laboratory, USA/The Ames Laboratory, USA/CNRS Grenoble, McPhy Energy & BASF, Hystore Technologies Ltd and Labtech.

Among my interests is to explore new strategies in R&D (virtual offices), the editorial work and the smart applications development for editorial, consultancy, servicing & teaching purposes.

DISSERTATION

Title: "Synthesis and characterization of structural and magnetic properties of new intermetallic rare earth - transition metal compounds for high temperature permanent magnet applications"

There have been developed and characterized (interactions, magnetic domains, coercivity mechanisms, magnetic viscosity) new nanocomposite rapidly solidified magnetic materials, based on Sm-Co compositions with boron, which are found to have very high coercive field at room and much higher temperatures without the need of a long and complicated heat treatment.

AWARDED POSTDOC

Title: "Metal hydrides for hydrogen storage", more detailed by using Mg-type and pseudobinary intermetallic type of materials

MBA thesis: "Viability study of a small and medium-sized spin-off company in energy sector": Organisation and Management, Accounting and Finance, Leadership and Decision-Making, Marketing (Expert Choice software).

CERTIFICATES

- Teaching and Supporting Learning in Higher & Professional Education, 2014.
- Post Graduate Skill Path in Electron Microscopy, Integrated Post-Graduate School, KMM-NoE (Knowledge-based Multicomponent Materials for Durable and Safe Performance – Network of Excellence), 1st Intensive Session of Electron Microscopy, Krakow, Poland 29/05/2006 – 02/06/2006.
- Certificate on laboratory and fire safety, Chemical Process Engineering Research Institute (CPERI), National Centre for Research and Technology-Hellas (CERTH), Thessaloniki, Greece, 12/4/2003 - 13/4/2003.
- High magnetic field measurements of 23T (Magnet-M6) in "Grenoble High Field Magnetic Laboratory (GHFML)", 27/10/2002 – 3/11/2002.

- Certificate on X-ray safety at the University of Delaware, USA 19/7/2001.

COMPUTER SKILLS AND COMPETENCES

* Editing: Microsoft Word, Microsoft Power Point, Adobe Page Maker, Adobe Acrobat, HTML programming, Brochure Design Software

* Databases: Microsoft Access, Microsoft Excel

* Photo-Video Developing-Editing: Photoshop Elements, Corel Photo Paint, InDesign, Movie Maker.

* PC Operation Systems: Windows 2000, Windows XP, Windows 7

* Networking: Outlook Express, Microsoft Outlook, HTML Script, Mozilla Thunderbird

Other: analytic hierarchy process software Expert Choice 2000, XCode (smart apps), COMSOL Multiphysics 3.5-4.3a, FORTRAN, ORIGIN 6-8, RIETICA, MATLAB, Webmaster, LATEX, HOMER, Digitize It

Smart Applications: <http://eqnatia.mobapp.at>, <http://epsrc.mobapp.at>, <http://cfdmech.mobapp.at>, <http://hydrogen.mobapp.at>, <http://comsol.mobapp.at>, <http://demokritos.mobapp.at>

AD HOC REVIEWER (2006-now) – EDITORIAL (2009-now)

- 2013-now Editor at Scientific Reports, Nature Publishing Group, I.F. 5.578 (first I.F. 2014), www.nature.com/srep
- 2015-now, Materials Science and Engineering B, Elsevier, I.F. 2.331, <http://www.journals.elsevier.com/materials-science-and-engineering-b/>
- 2013-now, Editor at 'Materials', MDPI, I.F.2.728 (2014), <http://www.mdpi.com/journal/materials>
- 2016-now, Section Editor-in-Chief, MDPI, <http://www.mdpi.com/journal/challenges>
- 2014-now, Editor in Open Chemistry (I.F. 1.329) <http://www.degruyter.com/view/j/chem> and Open Physics (I.F. 1.085) <http://www.degruyter.com/view/j/phys>, De Gruyter Open
- 2014-now, Editor-in-Chief at JNAT, MSEPJ and JEERT of Verizona Publishing Ltd, London, Uk, <http://verizonaonlinepublishing.com/> (covered by Google Scholar) MSEAR Scopus list (under evaluation)
- 2013-now, Review Editor at Frontiers-Energy Research (Energy Systems and Policy), and Physics, Partnership in NPG, <http://community.frontiersin.org/people/SofoklisMakridis/123078>
- 2013, Guest Editor at International Journal of Hydrogen Energy (MRE2013-conference special issue)
- 11/2011-2014, Editor at Central European Journal of Chemistry (Solid State Chemistry-materials for hydrogen technologies), Versita and Springer-Verlag. I.F. 1.167 (2012) <http://www.versita.com/cejc>
- 2012, Guest Editor in special issue "Materials for hydrogen storage and fuel cells" in Central European Journal of Chemistry
- 2011-now, Editor, HCTL Open International Journal of Technology Innovations and Research (IJTIR)
- 2/2009-2013, Associate Editor in Central European Journal of Physics, Versita and Springer-Verlag. <http://www.versita.com/cejp>

Referee in

1. International Journal of Hydrogen Energy (2008-now)
2. Journal of Physics: Conference Series (2013-now)
3. Nanotechnology (2008-now)
4. Journal of Alloys and Compounds (2009-now)
5. Journal of Nanoscience and Nanotechnology (2009-now)
6. Journal of Physics D: Applied Physics (2008-now)
7. Physica Scripta (2010-now)
8. Materials Science and Engineering B (2008-now)
9. Materials Research Bulletin (2008-now)
10. Journal of Applied Physics (2008-now)
11. Central European Journal of Physics (2009-2014)
12. Central European Journal of Chemistry (2011-2014)
13. IEEE Transactions on Magnetics (2010-now)
14. Materials Letters (2013-now)
15. Scientific Reports (2013-now)
16. Nanoscale (2014-now)

17. Frontiers (2015-now)
18. Open Physics (2014-now)
19. Open Chemistry (2014-now)

PRESS RELEASES –EXPOSURE of my team’s activities

- 2013, Energy-Matters Group with LBNL/Berkeley partnership in hydrogen storage and CO₂ capture <http://materialschemistry.org.uk/efficient-hydrogen-storage-aim-for-bolton-and-berkeley-collaboration/> (this release reproduced in many sites in UK, USA, Greece-**econews**, France) <http://www.econews.gr/2013/12/11/erevna-apothikefsi-udrogonou-109266/>
- 2010, Research highlight in Physical Chemistry via VerticalNews http://www.verticalnews.com/premium_newsletters/Chemicals-and-Chemistry-Business/2010-04-09/70680CCJ.html
- 2013, Efficient hydrogen storage aim for Bolton and Berkeley collaboration <https://www.bolton.ac.uk/MediaCentre/Articles/2013/Dec2013-02.aspx>
- 2013, Sustainable Materials Research Training (SMaRT) Camp - See more at: <http://www.bolton.ac.uk/Students/News/2013/Dec2013-08.aspx#sthash.fobjfvw3.dpuf> (Student’s responsible)
- 2014, CO₂ innovation for environmental research <http://www.bolton.ac.uk/Students/News/2014/May2014-02.aspx>
- 2014, <http://www.bolton.ac.uk/Students/News/2014/May2014-06.aspx>
- <http://www.achelostv.gr/news/2016/09/30/1o-sυνέδριο-ηαεε-με-τίτλο-το-τοπίο-στη-νέα-ε/>

CHAIRS/HONORS/AWARDS/INVITATIONS

- 2014, 2015 PhD external examiner in Anna University, INDIA & Nazarbayev University, Kazakhstan
- 2016, Scientific Committee, 2016 International Conference on Materials Science and Nanotechnology (ICMSNT 2016), Seoul, South Korea
- 2016, Conference Committee, 2nd International Electronic Conference on Materials Science, 2-16 May 2016, MDPI, “Materials”
- 2016, International Technical Committee, International Conference on Renewable Energy and Smart Grid (ICRESG 2016), March 20-22, 2016 Bangkok, Thailand.
- 2016, Scientific Committee, International Conference on New Energy and Future Energy System, August 19th- 22nd, 2016, Beijing, China.
- 2016, Scientific and Organizing Committee, 6th Greek Conference on Metallic Materials, 7-9 December, Ioannina, Greece.
- 2016, Co-Chair, International Conference on “Innovative Manufacturing Engineering and Energy”- IManEE, September 23-25, 2016, Kallithea Chalkidiki, Greece.
- 2015, Co-Chair, International Conference on Materials and Renewable Energy, Chania, Crete, Greece
- 2015, Chair NanoMatEn International Conference & Exhibition, 15 Jun - 17 Jun 2015 | Paris - France
- 2014, Chair, 2nd International Symposium on Energy Challenges and Mechanics, Session 03: Hydrogen Storage and Compression, 19-21 August 2014, Aberdeen, Scotland, UK
- 2014, Co-Chair, International Conference on Materials and Renewable Energy, Hong Kong, 8-10 August 2014
- 2014, 1st International Electronic Conference on Materials, “Functional Materials and Interfaces”, 26 May to 10 June 2014, MDPI, “Materials”

- 2013, Co-Chair, International Conference on Materials and Renewable Energy, Athens, 1-3 July, Greece
- 2013, Publication & Local Committee, Joint European Magnetic Symposia JEMS2013, 25-30 August, 2013
- 2008, Organizing committee in International Workshop Rare-earth magnets and their applications (REPM08)
- 2012, Greek Ministry of Education, **Academic and Research Excellence in Higher Education: Promotion and Support**, <http://excellence.minedu.gov.gr>
- 12/2008, Award from the Innovative Pole of Central Macedonia "Innovative Ideas in Central Macedonia 2008" for my spin-off business plan on "Materials & Hydrogen Technologies S.A."
- 1/1/2005-30/6/2006, Postdoctoral Fellowship due to PhD excellence award from the State Scholarships Foundation (IKY) on science section of Engineering, Technology (006) and subsection Materials Science (006.070).
- 2004, Award "Dimitris Katakis" of the best publication presented as a poster entitled "Hydrogenated rare earth – transition metal ferromagnetic materials, 1st National Conference o Hydrogen Technologies: Research – Development – Applications, National Hydrogen, Athens, Greece.
- 1/6/2011 Invited Lecture on 'Intermetallic compounds for hydrogen storage: the case of AB₂-type and nano-Mg', Materials for Energy Conversion and Storage (MECS), Faculty of Applied Sciences, Dept. Chemical Engineering, Delft University of Technology
- 1/4/2011 Invited Lecture on 'Efficient Hydrogen Storage and hydrogen compression by using metal hydrides', Universitat Autònoma de Barcelona, Physics Department & Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain
- 22/06/2010, Invited Lecture on 'RE-TM compounds for energy applications', Institute for Complex Materials, Leibniz Institute for Solid State and Materials Research, IFW, Dresden
- 2007, Invited Lecture, International Symposium on "Materials Issues in a Hydrogen Economy", Richmond, Virginia, USA.
- 7/9/2006, Invited Lecture: "Synthesis processes and study of metal hydrides – hydrogen tanks", National Hellenic Research Foundation, Greece.
- 27/4/2006, Invited lecture: "Nanocomposite magnetic materials and metal hydrides for energy applications", Institute of Materials Science, National Center of Science and Research "Demokritos", Greece.
- 21/10/2004, Invited Lecture: "Synthesis and Characterization of the properties of nanophase materials", Department of Materials Science, University of Patras, Greece.
- International Conference on Diffusion in Solids and Liquids – Mass Transfer, Heat Transfer and Microstructure and Properties, DSL-2009.
- International Materials Symposium MATERIAIS 2009 (XIV meeting of SPM - Sociedade Portuguesa de Materiais), Technical University of Lisbon, 2009.
- The 2008 International Symposium on Metal-Hydrogen Systems, Reykjavík, Iceland, 2008.
- Inorganic Materials 2006 Conference, Ljubljana, Slovenia, 2006.
- World Hydrogen Energy Conference, Lyon, France, 2006.
- European Powder Diffraction Conference (EPDIC), Geneva, Switzerland, 2006.
- International Materials Symposium MATERIAIS2005, XII Portuguese Materials Society Meeting, III International Materials Symposium, Aveiro, Portugal, 2005.
- International Symposium on Metal-Hydrogen Systems Fundamentals & Applications (MH2004), Cracow, Poland.
- Eighteenth International Workshop on High-Performance Magnets and Their Applications, Annecy (France).
- INTERMAG conference, Amsterdam, Holland, 2002.

RESEARCH/ACADEMIC/INDUSTRIAL/CUNSALTANCY

- 2014, Assistant Professor, **University of Patras, Greece**
- 2012-2013, External Visiting Researcher, **Italian Institute of Technology, Lecce, Italy (Dr. Athanasia Athanasiou)**
- 9-10/2012, Visiting Expert, Energy Systems, Department of Mechanical, Materials and Manufacturing Engineering, **The University of Nottingham, UK (Prof. Gavin Walker)**
- 2004 – 2010, Adjunct Professor and then Lecturer, **University of Western Macedonia, Greece**

- 2003 – 2011, **Institute of Nuclear Technology and Radiation Protection, National Centre of Scientific Research “DEMOKRITOS”**, External Associated Researcher (Dr. Athanasios K. Stubos)
 - European Integrated Program NESSHY – Novel Efficient Solid Storage for Hydrogen
 - **Visiting Researcher in Jožef Stefan Institute** through the Bilateral Program between Greece-Slovenia on “Novel Solid-State Intermetallic Materials for Hydrogen Storage and Advanced Characterizations”, General Secretariat Research Technology
 - European program HYSTORY – Hydrogen Storage in Hydrides for Safe Energy Systems
- Nov. 2003 – Mar. 2004 & July 2000 – July 2001, **Aristotle University of Thessaloniki**, Research Fellow
 - Bilateral program Greece-Britain, Synthesis and processes of nanocomposite permanent magnetic materials
 - European program CATNAT: Cost-Effective and durable nanostructured Pd catalysts for natural gas vehicle and premixed burner applications
- Feb. – May 2003, **National Centre for Research and Technology-Hellas**, Research Fellow
 - European R&D in ferrocube (Philips), Ferrites for high frequency applications
- Oct. 2001 – June 2003, **Institute of Materials Science, National Centre of Scientific Research “DEMOKRITOS”**, Research Fellow
 - European program HITEMAG – High Temperature Permanent Magnets
- June 2001 – Sept. 2001, **University of Delaware**, Research Fellow/Internship (Prof. George Hadjipanayis)
 - DARPA: Magnetic Meta-Materials Program for Electromagnetic Applications

Industry

- 2012-2013 CIDETE company (Spain), Thermoelectrics and hydrogen project EDEN (EU)
- 1/2/2011-31/10/2012, **HyStore Technologies Ltd**, Experienced Researcher, Marie Curie Industry-Academia partnership ‘ATLAS-H2’, 22A Stylli Gonia, 2362 Nicosia –Cyprus (contact person: Mr. Nikos Karagiorgis)
- 1/3/2006 – 31/8/2006 and 1/1/2007 – 30/6/2007, **HyStore Technologies Ltd**, Experienced Researcher, Marie Curie Transfer of Knowledge ‘DIAMANTE’, 22A Stylli Gonia, 2362 Nicosia –Cyprus (contact person: Mr. Nikos Karagiorgis)
- 2010 – now, **Energy Conversion Devices (ECD Ovonic)**, long distance collaboration on electronic properties research for materials dedicated on batteries, 2956 Waterview Drive, Rochester Hills, Michigan 48309, USA (contact person: Dr. Kwo Young)

Consultancy

CETCOR Conferences Events (Interaction with Dr. Malika Ardhaoui), CognoLink/Third Bridge (UK), Origami Engineering (UK), Lek (France), Amen-Technologies (Greece), CIDETE (Spain), Hystore Technologies Ltd (Cyprus), LabTech (Bulgaria), McPhy (France)

1/12/2012-30/5/2013, **Materials for low-carbon energy technologies: Critical Metals. Joint Research Centre (Institute for Energy and Transport), EUROPEAN COMMISSION**

RESEARCH GRANTS

EPSRC ID (PID: M112587G), FP7-HORIZON2020 Expert, National Science Centre (Poland)

TEACHING EXPERIENCE

STUDENT SUPERVISION/Co-Supervision: 8 PhD, 35 undergraduate students (diploma and pre-diploma thesis)

- Materials Applications for Energy and Environmental Technology (Materials to systems CFD modelling)
- Materials Science and Technology I (summer semester)
- Materials Science and Technology II (winter semester)
- Electronics & Smart devices (undergraduates)
- Smart Materials and Systems (Fundamental and Experimental approaches), MSc in Smart Materials Program

under IMRI

- Hydrogen Systems: from materials to applications, MSc in Advanced Materials for Energy Program under IREET
 - Fuel Cells, MSc at Advanced Materials for Energy Program under IREET
 - CFD modelling - Design programming (IREET & IMRI)
 - Physics II: Electromagnetism
 - Experimental techniques and measurement technology
 - Materials Applications for Energy and Environmental Technology (Materials to systems CFD modelling)
 - Physics I: Mechanics
 - Electrodynamics
 - Chemistry: Inorganic
 - Construction Materials and Systems for Energy Saving
 - Policy of Research Technology, Innovation and Management Strategies
 - Hydrogen Technologies
 - Introduction to Computers of the 1st semester
 - Introduction to Energy Management
 - Electrotechnics-Electric Circuits
 - Electric Machines
- 1999 (Undergraduate physics tutor)
- Exercises in "Classical Electrodynamics" of the 5th and 6th semester (Responsible: Prof. Evaggelos Manesis, email: emanesis@cc.uoi.gr)

E-learning packages: e-class, moodle, blackboard

Selected supervised theses

- Nikoleta Piperidou, **ECONOMOPOLITIC AND TECHNICAL ANALYSIS OF THE CASE OF HYDROGEN AS A FUEL IN INTERNATIONAL SHIPPING THAT CHANGES CLIMATES**, 2016-now, with Synnogy Ltd/Uk
- Theodoros Tzoganis, **Phase Change Materials and Hydrogen Technologies for Green Buildings**, 2016-now

Dr. Gkanas, received his PhD under my supervision is now a Lecturer in Department of Mechanical, Aerospace and Automotive Engineering at Coventry University

- 17 December 2014 (Awarded) Ph.D. thesis, "Nanocomposite materials and processes for energy applications", Mr. Evaggelos Gkanas (In CIDETE company-Spain and University of Nottingham) University of Bolton, UK
- 17 December 2014 (Awarded) Ph.D. thesis, "Synthesis and characterization of intermetallic materials for metal hydride compressors", Mr. Evaggelos Kouloukakis (in MCPHY company-France) University of Bolton, UK
- June 2011, Dr. Alexandra Ioannidou Ph.D. thesis, "Intermetallic materials for hydrogen storage applications" - NOW POSTDOC in NCSR 'Demokritos' (NEXTEC EU funded project) and CEO Amen Technologies Ltd

UK-China partnership PhD with Professor Xiaoyan Song in "High Temperature Permanent Magnets for Energy Systems"

One of my diploma students, Mr. Antonios Oikonomou, is a PhD candidate in the Nobel Team on Graphene in Manchester

2015

- Ioannis Panagiotopoulos, "CO₂ capture in Metal Matrix Membranes" - grade 10/10

2014

- Kostas Dokas, "SOFCs & Metal hydride tank system: Theoretical approaches" - grade 10/10
- Anastasia Kitsoglou, 'Magnetic Materials in Wind Turbines' - grade 10/10

2013

- Emmanouil Anastasiou, "Mechanical and Chemical characteristics of optimized pellets of biomass for efficient Biofuels" - grade 10/10
- Konstantinos Filios, "Magnetic thin films on Energy Applications" - grade 10/10
- Andreas Andreou, "SEM analysis on filters and PM10-particles investigation for the industrial zone of Mediterranean sea" - grade 10/10
- Konstantinos Protosaltis, "Thermoelectric Materials study by using the Comsol multiphysics", - grade 10/10 (Now a MSc student at Cranfield University)

2012

- Vasilis Bagiatis, "Modelling of a p and n type thermocouple of Bismuth-Telluride using Comsol multiphysics 4.2a" - grade 10/10
- Chrysoula Mpounta, 'Development of a photovoltaic array model for use in powerelectronics simulation studies: Case studies' - grade 10/10
- Gregory Mourouzis, 'Structural and Thermodynamic properties of Coal batches for energy production' - grade 10/10 {in collaboration with The Institute for Solid Fuels Technology and Applications, www.lignite.gr}
- Athanasios Athanasiadis, 'Development and Characterization of Zr_{0.5}Ti_{0.5}Cr_{1.2}V_{0.8} for efficient hydrogen storage'

2011

- **Dr. Alexandra Ioannidou, Ph.D. thesis, "Intermetallic materials for hydrogen storage applications"**
- Lykou Aggeliki & Malakou Aikaterini, "Introduction in the Management of Entrepreneur: application on electric market bussiness" - grade 9.5/10 & 10/10 (in committee)
- Feretou Stavroula, "The role of education and government on entrepreneurship" - grade 10/10 (in committee)
- Petros Papanauam, "Magnetic Brakes and COMSOL simulation on permanent magnet brake" - grade 10/10
- Sofia Lasda, "X-ray diffraction patterns theoretical analysis on Laves AB₂-type intermetallics and hydrogenated" - grade 10/10
- Nikias Batsoulis, "Computational and synthesis analysis of Mg-nanopowders and thin films" - grade 10/10

2010

- Diploma thesis, "Thermal Insulation in MEMS Through the Formation of Porous Silicon", Mr. Antonis Oikonomou (in collaboration with the Institute of Microelectronics in NCSR 'Demokritos')
 - MPhil in Materials Science and Engineering, The University of Manchester, UK
 - PhD candidate (Graphene) in Materials Science and Engineering, The University of Manchester, UK
- Diploma thesis, "Synthesis and characterization of Mg-based metal hydrides" Mr. Batsoulis Nikias
- Diploma thesis, "Synthesis and characterization of TiMn_{0.4}Fe_{0.2}V_{0.4}, TiMn_{0.1}Fe_{0.2}V_{0.7} and Ti_{0.4}Zr_{0.6}Mn_{0.4}Fe_{0.2}V_{0.4} metal hydrides", Mr. Evaggelos Kouloukakis: grade: 10/10 - 2010
 - Internship in IFAM, Fraunhofer, Dresden - hydrogen storage in light metal hydrides

2009

- Diploma thesis, "Development and characterization of La_{0.8}Sr_{0.2}Co_{1-y-z}Fe_yMn_zO_{3-δ} (x=0.4, 0.6, 0.8, y=0.4, 0.8, and z=0.1, 0.2) and oxides Ce_{0.9}Gd_{1-x}R_xO_δ (x=0, 0.05 and R=Sm,Pr,Dy) for solid oxide fuel cells applications", Mr. Efklidis Tsiligeridis

2008

- Diploma thesis, "Development and characterization of Mg compounds based on Mg₂Ni/M (where M=TiB₂, V, Ta) for hydrogen storage", Ms. Helen Michailidou, {After M.Sc. in Renewable Energy: Technology and Sustainability (University of Reading-UK)}
- Diploma thesis, "Study of La(Ni,Zn,Co,Cr,Zr/Ti)₅ for Ni/MH batteries - Theoretical study of La_{1-x}Sm_x(Ni_{1-y}Co_y)₅", Ms. Christina Strapatsa {Studentship in Czech Republic - materials for energy applications}

2007

- Pre-diploma thesis, "Magnetic Levitation" - Mr. Antonis Oikonomou

INTERNATIONAL EXPOSURE

Visited: USA, United Kingdom, France, Austria, Slovenia, Germany, Cyprus, Portugal, Holland, Switzerland, Italy, Spain, Ukraine, Luxembourg, Brussels, Scotland and Poland.

Attended more than 13 international conferences to present research work on materials for energy applications

Selected Invited internationally:

- 29-30/11/2011, Invited lecture in 'Metal hydride Nanopowders for hydrogen compression applications', SMART MATERIALS FOR HYDROGEN and RENEWABLE ENERGY, Third Polish Forum on Fuel Cells and Hydrogen Technologies, Warsaw, Poland
- 28/9/2011 Invited Lecture in 'Sm-Co Nanocomposite magnetic materials as rapidly solidified melt spun ribbons: synthesis and characterization', Italian Institute of Nanotechnology, Lecce, Italy
- 1/4/2011 Invited Lecture on 'Efficient Hydrogen Storage and hydrogen compression by using metal hydrides', Universitat Autònoma de Barcelona, Physics Department & Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain
- 2009, International Conference on Diffusion in Solids and Liquids – Mass Transfer, Heat Transfer and Microstructure and Properties, Lecture: "Interstitial hydrogen storage in intermetallic compounds and low temperature metal hydride tanks", DSL-2009.
- 2006-2009, Invited visiting researcher in the Frederick University, Nicosia, Cyprus (Lectures on materials science and research on intermetallic compounds for hydrogen storage).

Management Committee (substitute member) in the following COST ACTIONS:

- 1) MP1103: Nanostructured materials for solid-state hydrogen storage
- 2) MP1004: Hybrid Energy Storage Devices and Systems for Mobile and Stationary Applications
- 3) MP1005: From nano to macro biomaterials (design, processing, characterization, modeling) and applications to stem cells regenerative orthopedic and dental medicine (NAMABIO)

PUBLICATIONS

https://www.researchgate.net/profile/Sofoklis_Makridis/

Monograph – Book Chapters

1. G.E. Marnellos, C. Athanasiou, S.S. Makridis and E.S. Kikkinides, Invited chapter "Integration of Hydrogen Energy Technologies in Autonomous Power Systems", Book: Hydrogen-based Autonomous Power Systems, Techno-economic Analysis of the Integration of Hydrogen in Autonomous Power Systems, Series: Power Systems, by Lymberopoulos, Nikolas & Zoulias, Emmanuel I. (Ed.), 2008, Approx. 190 p. 50 illus., Hardcover, ISBN: 978-1-84800-246-3, Springer-Verlag (London) Ltd
2. S.S. Makridis, Chapter 1: Hydrogen absorption for storage and compression in Book: **Methane and Hydrogen for Energy Storage**, Invited chapter by Senior Editor for Power & Energy with the Institution of Engineering & Technology (IET), edited by R. Carriveau & D.S-K. Ting, Turbulence & Energy Laboratory, University of Windsor, Canada, http://digital-library.theiet.org/content/books/10.1049/pbpo101e_ch1, 2016.

Refereed Journal Publications (* correspondence)

- 1) Sofoklis S. Makridis*, "Editorial: Methane and Hydrogen for Energy Storage (IET)", Journal of Energy and Environmental Research and Technology, Verizona Publishing, Volume 1, Issue 1, 2017 (opening-in press)
- 2) Evangelos Ch. Tsirogiannis, Georgios E. Stavroulakis, Sofoklis S Makridis , "Design and Modelling Methodologies of an Efficient and Lightweight Carbon-fiber Reinforced Epoxy Monocoque Chassis, Suitable for an Electric Car", Mater. Sci. Eng. Adv. Res 2 (1), 2017
- 3) E.I. Gkanas, S.S. Makridis, "Thermal Management of a MgH₂ cylindrical tank including the thermal coupling with an operating SOFC during the dehydrogenation process", International Journal of Hydrogen Energy, <http://dx.doi.org/10.1016/j.ijhydene.2016.01.165>, 2016.
- 4) S.S. Makridis*, A.K. Stubos, "Investigation on the Hydrogenation Properties of Sm(Co_{0.6}Fe_{0.2}Zr_{0.16}B_{0.04})_{7.5} Compound", Journal of Nanoscience with Advanced Technology 1 (2), 35-39, 2015.
- 5) E.I. Gkanas, Y.L. Bakouros, S.S. Makridis, "Substitutionability" of the Critical Raw Materials in Energy Applications: A Short Review and Perspectives", Mater. Sci. Eng. Adv. Res 1 (3), 1-9, 2015.

- 6) A. Ioannidou, S.S. Makridis, E.S. Kikkinides, A.K. Stubos, M. Gjoka, "Morphology, Microchemistry, Structural and Hydrogenation Characteristics of (Zr-Ti)(Cr-V-Ni) 2 Intermetallic Compounds", *J Nanosci Adv Tech* 1 (2), 17-29, 2015.
- 7) Evangelos I. Gkanas, Theodore Steriotis, Athanasios K. Stubos, Peter Myler, Sofoklis S. Makridis, "A Complete Transport Validated Model on a Zeolite Membrane for Carbon Dioxide Permeance and Capture", *Applied Thermal Engineering*, Volume 74, Pages 36-46, 2015.
- 8) E.D. Kouloukis, S.S. Makridis, E. Pavlidou, P. de Rango, A.K. Stubos, "Investigation of ZrFe₂-type materials for metal hydride hydrogen compressor systems by substituting Fe with Cr or V", *International Journal of Hydrogen Energy*, Volume 39, Issue 36, 12 December 2014, Pages 21380-21385, 2014.
- 9) E.D. Kouloukis, E.I. Gkanas, S.S. Makridis*, C.N. Christodoulou, D. Fruchard, A.K. Stubos, "High Temperature Activated AB₂ Nanopowders for metal Hydride Hydrogen Compression", *International Journal of Energy Research*, 2014; 38(4):477-486. doi:10.1002/er.3147, 2014.
- 10) Elpida Samara, Paraskevi Giourka, Ioannis Bakouros, Dimitris Skalkos, Sofoklis Makridis, "Smart Specialization for Regional Development: The innovation strategy of the future for the Region of Western Macedonia", *HCTL Open International Journal of Technology Innovations and Research*, Volume 6, ISSN: 2321-1814, ISBN: 978-1-62951-096-5, 2013.
- 11) Evangelos I. Gkanas, Sofoklis S. Makridis, Athanasios K. Stubos "Modeling and Simulation for Absorption-Desorption Cyclic Process on a Three-Stage Metal Hydride Hydrogen Compressor", *Computer Aided Chemical Engineering*, Volume 32, Pages 379-384, 2013.
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Presentations in National Conferences and Workshops: 29 (papers-abstracts)

Greek Books

- Sofoklis S. Makridis, "Materials and Processes for Energy and Environmental Technologies", 157 pages, 2006, lecture notes, Press of the University of Western Macedonia
- Sofoklis S. Makridis, "Introduction to Energy Management", 157 pages, 2006, lecture notes, Press of the University of Western Macedonia
- Eustathios S. Kikkinides and Sofoklis S. Makridis, "Hydrogen Technologies", 196 pages, 2005, lecture notes, Press of the University of Western Macedonia (Chapters on Metal Hydrides, Fuel Cells, and Materials Characterization)

GoogleScholar: ~270 citations. h-index: 8, i10-index: 7

ADVISORY INVESTMENT ACTIVITIES

AMEN-TECHNOLOGIES Ltd spin-off in Energy Materials (www.amen-technologies.com) - ex PhD student Dr. Alexandra Ioannidou

Ennovations Company (www.ennovations.co)

PATENTS

- "Multiapparatus Arc Melting for Rapid Solidification Processes", Sofoklis S. Makridis, Athanasios K. Stubos, and Eustathios S. Kikkinides, 2007 re-coded in 2010 as 'Multiapparatus Arc-Melting for Controlled Rapid Solidification Processes and in-situ conductivity measurements'
- "New Development Methods of Novel Composite Ceramic and Intermetallic Compounds", Sofoklis S. Makridis, Eustathios S. Kikkinides and Athanasios K. Stubos, 2010

PROFESSIONAL ACTIVITIES

- **IEEE Magnetics Society**
- **EPSRC Review Proposal Panel (Uk)**
- **Member of the European Hydrogen Association**
- **Member of the Materials Research Society (MRS)**
- **Innovateuk**

- **UK Hydrogen & Fuel Cells Association**
- **Knowledge Centre for Materials Chemistry (KCMC)**
- **Technology Strategy Board (UK)**
- **Greek Physics and Materials Science Association**