



General Summary

VASSILIS ZASPALIS

Professor, Materials Science and Technology

Director of the Sector Technologies

Faculty of Engineering – Aristotle University of Thessaloniki

Vassilis T. Zaspalis was born in 1963 in Thessaloniki. He received his University Diploma in Chemical Engineering from the University of Patras (1981-1986) together with a full scholarship for Ph.D. study at the University of Twente in the Netherlands. After completing the Ph.D. study (1990) and spending an one year post-doc at the same University, he moved on into industrial research at the Philips Research Laboratories in Eindhoven-the Netherlands (1991-1995) and Aachen-Germany (1995-2001) where in 1999 he received the title of “Senior Scientist” heading the research group dedicated to the business unit Magnetic, Dielectric and Piezoelectric Ceramics. A main task during this period was the generation of research projects and the supervision of their successful execution as well as of their successful transfer into production sites worldwide. In the frame of this last task he spent several 3-4 month periods in materials production units in Europe, the US and Far East.

In 2001 he returned back to Thessaloniki, at the Center for Research and Technology-Hellas where he founded, organized and managed the Laboratory of Inorganic Materials. In May 2009 he has been elected full professor at the Department of Chemical Engineering of the School of Engineering of the Aristotle University of Thessaloniki. Since then he continues to be collaborative faculty member at the Center for Research and Technology-Hellas. In September 2015 he has been elected Head of School of Chemical Engineering, position in which he has been re-elected in 2017 until September 2020. He has been elected director of the sector “Technologies” (2021-2023) while from 2010 he is director of the Laboratory of Materials Technology.

The published works of Prof. V. Zaspalis, among others, include 35 world and international patents, 135 publications in peer refereed journals and 72 refereed publications in the proceedings of international conferences. The total number of citations to the published works approximates ~3700 and he has a “so-called” h-index of 36 which increases up to 40 if citations of international patents are taken into account. Since 2001, V. Zaspalis has been responsible for the generation of a research budget of approximately 9.6 million Euro through bilateral Industrial cooperations and European Community or National research projects.

During his scientific career Prof. Zaspalis has received numerous awards among which the best European Award for his Ph.D. dissertation (1991), the Philips Innovation Awards (1996 and 1998), the European DeScartes Award (2008), and best scientific presentation awards in International Conference (2013). From 2009 to 2016 he has been elected secretary and member of the Board of Directors of the European Institute of Excellence on Nanoporous Materials

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Personal Data:

Place/Date of Birth: Thessaloniki 15 July 1963
Marital Status: Married (three children)
Languages: Greek (mother tongue), English, Dutch, German (all perfect)

Studies:

1981-1986 : Degree on Chemical Engineering
Department of Chem. Eng.- University of Patras-Greece

1986-1987: M.Sc. Degree on Chemical Engineering
Department of Chemical Technology
University of Delft – the Netherlands

1986-1990: Ph.D. Degree
Department of Chemical Technology
University of Twente – the Netherlands
Thesis Subject: The synthesis, characterization and application of porous ceramic membranes in membrane reactors for enhancing the efficiency of chemical processes

Professional Experience**Research:**

1990-1991: Post-doctoral University research
Department of Chemical Technology
University of Twente – the Netherlands
Research Subject: The impact of drying stresses on the microstructure formation and crack appearance of porous ceramic membranes.

1991-1995: Industrial Research, Development and Production
Philips Research Laboratories, Eindhoven – the Netherlands
Function: Research Scientist
Research Subject: Advanced ceramic electronic materials and manufacturing process for electronic and telecommunication applications

1995-2001: Industrial Research, Development and Production
Philips Research Laboratories, Aachen – Germany
Function: Group Leader “Magnetic Ceramics”
Research Subject: Coordinating research progress, roadmap construction and transfer of results to production in relation to advanced magnetic ceramic materials.

2001-2010: Institutional Research
Center for Research & Technology-Hellas, Thessaloniki Greece
Function: Laboratory director (Researcher B-2005-Researcher A)
Research Subject: Founding the Laboratory of Inorganic Materials, create research funding and organize research in the fields of functional and structural ceramic materials.

2010-Today: Full Professor at the Department of Chemical Engineering of the Aristotle University of Thessaloniki and Collaborative Faculty Member at the Center for Research and Technology Hellas

**Professional Experience
Industrial Production**

- 03/1992-06/1992 **Philips Components, Hamburg-Germany**
Upscale development and production process of materials for advanced power magnetic components.
- 03/1994-06/1994 **Philips Components, Guadalajara-Spain**
Upscale development and production process of materials for advanced telecommunications magnetic components.
- 06/1996-09/1996 **Philips Components, Eindhoven-the Netherlands**
Upscale development and production process of multilayer dielectric components for electronics.
- 06/2002-08/2002 **FerPol, Skiernewicze-Poland**
Upscale development and production process of a new high temperature magnetic material for specific high temperature applications
- 06/2004-08/2004 **Hispanoferritas S.A., Madrid-Spain**
Adaption of the process and enable it to accept raw materials of various purity degree without influencing the quality of the products
- 03/2008-06/2008 **Ferrocube Dong Guang-China**
Design and introduction into production of powders for accelerated firing processes in tunnel kilns.

Table 1: Overview of published scientific work (in numbers)

Type of Activity	Number
Article publications in refereed international scientific journals	135
Issued International & World Patents	35
Full article publications in refereed proceedings of international conferences	72
Books	4
Chapters in multiauthor books	4
Full article publications in refereed proceedings of national conferences	81
Presentations in International conferences (without full article submission)	85
Presentations in National conferences (without full article submission)	27
From International/National Conference Participations, invited lectures	35
Bibliometrics	
Number of citations to the published work	~3700
H-Index (not including patents)	36
H-Index (including patents)	40

Table 2A: Education – Teaching (Overview in Numbers)

Course Title	Type	Department	Univ.	Academic Years	Contribution percentage	Equivalent Semester Nr.
Undergraduate Courses						
Materials Science & Technology I	Obligatory (5 th Sem.)	Chemical Engineering	AUTh	2009-10 to 2022-23	100%	14
Materials Science & Technology II	Obligatory (6 th Sem.)	Chemical Engineering	AUTh	2009-10 to 2022-23	100%	14
Techniques for Material Characterization	Choice (>7 th Sem.)	Chemical Engineering	AUTh	2010-11 to 2022-23	100%	13
Advance Material Design	Choice (>8 th Sem.)	Chemical Engineering	AUTh	2011-12 to 2013-14 2015-16 to 2022-23	100%	11
Transfer of Results from Laboratory to Industrial Production	Choice (>8 th Sem.)	Chemical Engineering	AUTh	2014-15 to 2015-16 2018-19 to 2022-23	100%	7
Total (undergraduate)						59
Postgraduate Courses		Postgraduate Program				
Design of Materials and Devices	Obligatory (1 st Sem.)	Chemical Engineering	AUTh	2015-2016, 2016-17	100%	2
Thin Film Technology	Choice (2 nd Sem.)	Nanosciences and Nanotechnologies	AUTh	2004-05 to 2022-23	$\frac{100}{3}\%$	8
The Structure of Materials	Obligatory (1 st Sem.)	Processes and Technology for Advanced Materials	AUTh	2014-15, 2016-17, 2018-19, 2020-21, 2022-23	$\frac{100}{3}\%$	1.7
Electronic Materials	Choice (2 nd Sem.)	Processes and Technology for Advanced Materials	AUTh	2014-15, 2016-17, 2018-19, 2020-21, 2022-23	$\frac{100}{3}\%$	1.7
Total (postgraduate)						13.4
TOTAL (GENERAL)						72.4

Table 2B: Education-Supervision of Student Theses

Type of Activity	Completed	In Progress May 2016
Undergraduate level		
Supervision of (summer) practical stages of Greek or International Students	25	1
Supervision of Diploma Theses	105	7
Postgraduate level		
Supervision of Diploma Theses	17	1
Ph.D. Theses		
Supervision of Ph.D. Theses	10	1

Table 3: Fund Generation for Scientific Research

Funding Agency	Number of Projects	Coordinator in:	Partner in:	Assigned Budget:
Bilateral Strategic Research Cooperation Projects with International Industry*	17	17		6.000 k€
Bilateral Service Cooperation Projects with international Industry**	9	9		0.210 k€
European Union Competitive Projects	7	1	6	1.145 k€
Competitive Research or Infrastructure Projects of the Ministry of Development (GSRT)	11	6	5	2.500 k€
TOTAL	44	33	11	9.600 k€

*Ferroxcube, Bosch-Siemens Home Appliances, Huawei, Philip Morris

**Philips Lighting, Douwe-Egberts, Tesla

Table 4: Important Awards

Year	Award
1991	First European Membrane Society Award for Ph.D. dissertation, as the best European Ph.D. Thesis in the field of membrane science.
1992	Shell Award for distinguished Ph.D. dissertations in European Universities
1996	First Philips Innovation Award for research results that have been successfully transferred into production and led to business success.
1998	First Philips Innovation Award for research results that have been successfully transferred into production and led to business success.
2008	European DeScartes Award for research within the European project Hydrosol (ENK6-CT-2002-00629)
2013	Best Lecture Award for the best University-origin lecture during the 11 th International Conference on Ferrites in Japan

OTHER PROFESSIONAL ACTIVITIES

- ✓ **Reviewer in more than 20 Scientific Journals** among which J.Appl. Phys., J. Mater. Sci., J. Amer. Ceram. Soc., J. Eur. Cer. Soc., J. Magn. Magn. Mater., J. Membr. Sci., Microp. Mesop. Mater., A.I.Ch.E. J., Industr.&Eng. Chem. Res, Desalination etc.
- ✓ **Permanent evaluator of project proposals** of International Organizations such as SNSF (Swiss National Science Foundation), BNSF (Belgian National Science Foundation), NWO (Dutch Scientific Research Organization), QNRF (Qatar National Research Fund).
- ✓ **Member** of Numerous European Scientific Organizations among of which elected secretary of the European Institute of Excellence on Nanoporous Materials
- ✓ **Member of the scientific or organizing committee** of more than 20 National or International Conferences (Chairman of 11th Panhellenic Conference on Chemical Engineering)
- ✓ **Materials and Technology Consultant** of major international industrial organizations specialized in the production of electronic materials.

RESEARCH INTERESTS

The relations between material, synthesis processes, microstructure development and properties or application performance of functional and structural ceramic materials.

More concrete, current research activities include:

- **CERAMIC MAGNETIC MATERIALS:** Synthesis properties and applications of ceramic magnetic materials such as ferrites of the cubic spinel or the hexagonal structure with applications in electric vehicle, high frequency telecommunications and inductive heating
- **CERAMIC MEMBRANE TECHNOLOGY:** Synthesis, characterization and properties of porous ceramic membrane for gas or liquid mixture treatment processes and high temperature membrane reactor processes.
- **OXIDIC OR METALLIC NANOPARTICLES:** Synthesis and characterization of nanoparticles for protection coatings, catalytic or biomedical applications.
- **REDOX CATALYTIC MATERIALS:** Synthesis, characterization and applications of mixed oxide materials as RedOx catalysts for chemical process of energetic or environmental interest (thermal decomposition or chemical looping processes). Emphasis on the relation between material defect chemistry and catalytic performance

SELECTED RELATIVELY RECENT REPRESENTATIVE PUBLICATIONS

Activity and Thermal Aging Stability of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ ($x = 0.0, 0.3, 0.5, 0.7$) and $\text{Ir}/\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ Catalysts for CO Oxidation with Excess O_2 , **Nanomaterials**, **13(4)**, Art. Nr. : 664 (doi : [10.3390/nano13040663](https://doi.org/10.3390/nano13040663)), 2023

Soft magnetic composite based on iron in sintered Mn–Zn ferrite matrix without non-magnetic coating, **Ceramics International** (doi : [10.1016/j.ceramint.2023.06.269](https://doi.org/10.1016/j.ceramint.2023.06.269)), 2023

Novel $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$ perovskite materials for chemical looping combustion applications, **International Journal of Energy Research**, **46(14)**, p. 20386–400 (doi : [10.1002/er.7999](https://doi.org/10.1002/er.7999)), 2022

Defect Chemistry and Chemical Looping Performance of $\text{La}_{1-x}\text{M}_x\text{MnO}_3$ ($\text{M} = \text{Sr}, \text{Ca}$, ($x = 0–0.5$)) Perovskites, **Nanomaterials**, **12(19)**, Art. Nr.: 3461 (doi : [10.3390/nano12193461](https://doi.org/10.3390/nano12193461)), 2022

Thermal instabilities of cobalt containing MnZn ferrite cores for medium (500 kHz) frequency applications, **Journal of Magnetism and Magnetic Materials**, **529**, Art. Nr.: 167848, (doi : [10.1016/j.jmmm.2021.167848](https://doi.org/10.1016/j.jmmm.2021.167848)), 2021

Magnetic Ageing in TiO_2 -doped Mn-Zn Ferrites. **Journal of Magnetism and Magnetic Materials**, **502**, 166576, 2020

FIVE MOSTLY CITED PUBLICATIONS

1. Solar water splitting for hydrogen production with monolithic reactors, SOLAR ENERGY 79(4), 409-421, 2005 (citations: 248)
2. Green synthesis and characterization of silver nanoparticles using Arbutus Unedo leaf extract, MATERIALS LETTERS 76(1), 18-20, 2012 (citations: 233)
3. Solar hydrogen production by a two-step cycle based on mixed iron oxides, JOURNAL OF SOLAR ENERGY ENGINEERING-TRANSACTIONS OF THE ASME 128(2), 125-133, 2006 (citations: 157)
4. $\text{La}_{1-x}\text{Sr}_x\text{M}_y\text{Fe}_{1-y}\text{O}_{3-\delta}$ perovskites as oxygen-carrier materials for chemical looping reforming, INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 36(11), 6657-6670, 2011 (citations: 134)
5. Hydrothermally prepared nanocrystalline Mn-Zn ferrites: Synthesis and Characterisation, MICROPOROUS & MESOPOROUS MATERIALS 114(1-3), 465-473, 2008 (citations: 120)
6. $\text{La}_{1-x}\text{Sr}_x\text{FeO}_{3-\delta}$ perovskites as redox materials for application in a membrane reactor for simultaneous production of pure hydrogen and synthesis gas, FUEL 89(6), 1265-1273, 2010 (citations: 112)

SELECTED PATENTS

- a. Material and Process for inductive cooking device, World Patent WO 2018/178787 A1
 - b. Process for the preparation of a binary membrane top layer, European Patent EP 0 401 928
 - c. Process for the preparation of titania membrane layers, Japanese Patent JP 3 021 330
 - d. Hybrid Electronic Device Comprising a Low Temperature Cofired LTCC Tape, World Patent WO 03/100799
 - e. Multilayer Microelectronic Substrate, United States Patent US 20060263641
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