

CURRICULUM VITAE

SURNAME: APERATHITIS

FIRST NAME: ELIAS

DATE OF BIRTH: 2 OCTOBER 1960

PLACE OF BIRTH: PIREAUS, GREECE

MARITAL STATUS: MARRIED, THREE CHILDREN

QUALIFICATIONS:

1983 B.Sc. Physics, Patras University, Patras, Greece.

1984 M.Sc., Physics Department, Dundee University, Dundee, Scotland, U.K.

Dissertation Title: "Photo-induced Structural Changes in a-Si"

1989 Ph.D., Applied Physics Department, Hull University, Hull, England.

Thesis Title: " A Study of Chemiplated and All-Vacuum Evaporated Cu_xS/CdS Thin Film Solar Cells".

SCHOLARSHIPS:

1) STATE SCHOLARSHIP FOUNDATION (I.K.Y.)

Scholarship for post-graduate studies abroad (programme 69⁰, duration 1-10-83 to 22-11-86).

2) SCHILIZZI FOUNDATION

Scholarship for finishing post-graduate studies - March 1987.

APPOINTMENTS:

1991 - date Application Scientist (1991-2004), Principal Scientist (2004-date), Microelectronics Research Group (MRG), Institute of Electronic Structure & Laser (IESL), Foundation for Research and Technology-Hellas (FORTH), Crete, Greece.

2017 - date Safety Manager of MRG/IESL/FORTH

1992 – 2000 Adjunct Professor, Physics Department, Crete University, Crete, Greece.

1993 - 1999 Lectures at "Summer School on Advanced Physics", Crete University, Crete, Greece.

2000 – 2005 Adjunct Professor, Department of Applied Information & Multimedia, School for Technological Applications, Technological Educational Institute, Crete, Greece.

2013 - 2014 Lectures at Erasmus- IP (Intensive Programme), Lifelong Learning Programme, Course title: "Transparent Electronics" organized by Technological Educational Institute of Crete, Chania,

- **7-20 July 2013**, talk topics: "ZnO-based TFTs on flexible substrates" & "TCOs for photovoltaic applications",

- **6-19 July 2014**- talk topic: "TCOs for photovoltaic applications"

- **2-6 July 2018**- talk topic: "Smart windows: how 'smart' can they be?"

2004 – date Reviewer in Journals (Appl. Phys. A, ECS J. Solid State Sci. and Techn., Journal of Alloys and Compounds, Mat.Sci. Engin. B, Materials Science in Semiconductor Processing, Phys. Stat. Solid. A & C, Solar Energy, Thin solid Films, Vacuum)

2015 – date Reviewer for GSRT projects

1995 – 2016 15 B.Sc. students project supervision

2014 – 2017 9 M.Sc. students project supervision

2012 – 2018 1 Ph.D. student research-technical supervision.

Research Interests:

- Oxide-based thin film materials & devices for transparent optoelectronic applications
- Photovoltaics (transparent and non-transparent)

- Materials and devices for smart windows and energy efficient buildings
- Nanostructured materials based on strongly correlated oxides for energy saving and storage.

RESEARCH PROJECTS:

a) coordinator or project investigator (PI)

- 1993 – 1995 Bilateral Joint Research Programme between Greece and Britain
Project Title: "High Efficiency Solar Cells With Multiple Quantum Wells Structure".
- 1994 - 1996 Bilateral Joint Research Programme between Greece and Germany
Project Title: "High Efficiency and Low Cost Solar Cells".
- 1996 - 1998 PENED 94, National Project on Photoelectrochemical Solar Cells based on TiO₂ nanostructures.
- 1998 – 2000 Bilateral Joint Research Programme between Greece and Slovakia
Project Title: "Renewable Energy Sources Based on III-V Solar Cells".
- 1999 – 2000 EPET II – Special Action “MICRO”,
"Development of System for the Study of Tolerance of Detectors, Sensors and Materials in Radioactive Environment" (Coordinator: ΕΚΕΦΕ «Dimokritos»).
- 2000 – 2001 Bilateral Joint Research Programme between Greece and Georgia
Project Title: "Low Cost and High Efficiency Thin Film Photovoltaics Based on III-V Materials For Terrestrial Applications".
- 2004 – 2006 Programme for the promotion of the exchange and scientific cooperation between Greece and Germany, I.K.Y – DAAD (IKYDA-2003),
Project Title: «Quaternary III-N based UV Detectors and Lasers»
- 2004 – 2006 Bilateral Joint Research Programme between Greece and Slovakia
Project Title: " Fabrication of novel transparent and conductive oxide with enhanced properties for optoelectronic and photovoltaic applications".
- 2005 - 2009 FP6/2002/IST/C – FET OPEN (STREP), Contract No: 511925 “Novel & Advanced Transparent Conductive Oxides -NATCO”.
- 2005 – 2006 International Collaboration Programme 2005, between Photonics Group, Tyndall National Institute, Ireland και MRG, ‘Optical and Electrical properties of Indium-Tin-Oxynitride as Transparent Conductive Oxide layer on GaAs and GaN based Optoelectronic devices’.

b) participation in projects

- 2004 - 2006 FP6-NMP-STREP-505641-1 “GANANO” "New Generation of GaN-based sensor arrays for nano- and pico-fluidic systems for fast and reliable biomedical testing".
- 2009 - 2013 FP7-NMP-2009-Large-3 “ORAMA - Oxide Materials Towards a Matured Post-silicon Electronics Era”.
- 2011 - 2014 FP7-PEOPLE-2011-IRSES, MC-IRSES International Research Staff Exchange Scheme, Project Title: “Oxide Nanostructures for Wireless Chemical Sensing-WIROX ”
- 2012 - 2015 National Project, ESPA 2007-2013, SUNERGASIA-PRAKS I I
Project Title: “Smart & Cheap Thermochromic Windows for Energy Saving in Buildings -EKSOTHERMO”.
- 2011-2014 National Project “THALES” Project titles: “NitPhoto : “High Efficiency III-Nitride Semiconductors Photovoltaic Devices”.
- 2012 - 2015 National Project, NSRF 2007-2013, Regions at the Center of Development, ‘Advanced Energy Materials –PROENYL-KRIPIS’.
- 2015 – 2016 Programme for the promotion of the exchange and scientific cooperation between Greece and Germany, I.K.Y – DAAD (IKYDA-2015), Project Title: «Calibration standard for a Scanning Microwave Microscope embedded in an automated nano-characterization environment inside a Scanning Electron Microscope».

RESEARCH EXPERIENCE:

Materials fabrication by:

- thermal evaporation (CdS, Cu₂S, CuAlO₂),
- ion-gun assisted e-beam evaporation (SiO₂, MgF₂, ZnS, HfO₂, Ta₂O₅, YF₃),
- sputtering (WTiSi, SiN, ITO, ITON, FeSi, VO₂, WO₃, AlN, ZnN, TaN, ZnO, ZnO:Ir-Al, NiO, NiAlO),
- PECVD (SiN),
- ion-plating (Cu₂S),
- PLD (ZnO, ZnO:Al, SrCu₂O₂).

Processing and characterization of electronic and opto-electronic materials & devices (TTFTs, FETs, HEMTs, MSMs, PVs, QWIPs, LEDs, Lasers, sensors, thermochromics, electrochromics).

Thin films and III-V solar cells (fabrication, processing, characterization).

Photolithography masks design for opto-electronic devices (PVs, QWIPs FPAs).

SCIENTIFIC EVENTS -Organization-Role:

1. 5th International Workshop on Expert Evaluation & Control of Compound Semiconductor Materials & Technologies -EXMATEC 2000, 22-24 May, 2000, Heraklion, Crete, Greece (Local committee)
2. 13th European Workshop on Heterostructure Technology –HETECH 2004, October 3-6, 2004, Koutouloufari, Heraklio, Crete, Greece. (Local committee)
3. International Conference on Transparent Conductive Oxides (TCO'06 & TCO'08) and International Conference on Transparent Conductive Materials (TCM'10 & TCM12 & TCM'14 & TCM16), October, Heraklion, Crete, Greece. (Local committee)
4. FEMS-EUROMAT, European Congress and Exhibition on Advanced Materials and Processes, Area C: Processing, Symposium C-3: Coatings and Surface Modification (Co-organizer):
(a) FEMS-EUROMAT 2015 Warsaw, Poland, September 20 – 24, 2015 and
(b) FEMS-EUROMAT 2017 Thessaloniki, Greece, 17-22 September 2017.
6. Invited speaker at Smart Materials Conference (title: 'Functional metal oxides for smart and energy autonomous windows') at Silver Jubilee Assembly of Advanced Materials Congress AFMC 2019), 24-17 March 2019, Stockholm, Sweden.

Metrics:

Researcher ID: O-2973-2013,

Publications in peer reviewed journals 65, **Presentations in conferences** 68

Citations (Scopus) 663,

h-index (Scopus) 14

Selected PUBLICATIONS:

- 1) *"Temperature Dependent Performance Enhancement of GaAs/AlGaAs Multiple Quantum Well Solar Cells "*,
E. Aperathitis, A.C. Varonides, D. Sands, C.G. Scott, V. Foukaraki, Z. Hatzopoulos, and P. Panayotatos,
Solar Energy Materials & Solar Cells, 70 (2001) 49-69, DOI: 10.1016/S0927-0248(00)00411-6; also appeared in "Photovoltaics Bulletin" - Research Trends, January 2002, p.12 .
- 2) *"Laser Interferometry as a Diagnostic Tool for the Fabrication of RIE-Edge-Emitting Lasers"*,
E. Aperathitis, Z. Hatzopoulos, A. Georgakilas and L. Richeboeuf,
Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures—20 (2002)1994-1999, DOI: 10.1116/1.1505960.
- 3) *"The effect of PLD deposition parameters on the properties of p-SrCu₂O₂/n-Si diodes"*,

- E. L. Papadopoulou, M. Varda, A. Pennos, M. Kaloudis, M. Kayambaki, M. Androulidaki, K. Tsagaraki, Z. Viskadourakis, O. Durand, G. Huyberechts, E. Aperathitis,
Thin Solid Films 516 (2008) 8154-8158, DOI: 10.1016/j.tsf.2008.04.024.
- 4) “*Effect of Annealing on the Properties of Indium–Tin–Oxynitride Films as Ohmic Contacts for GaN-Based Optoelectronic Devices*”
M. Himmerlich, M. Koufaki, G. Ecke, Ch. Mauder, V. Cimalla, J. A. Schaefer, A. Kondilis, N. T. Pelekanos, M. Modreanu, S. Krischok and E. Aperathitis,
ACS Appl. Mater. Interfaces 1 (2009) 1451-1456, DOI: 10.1021/am900138f.
 - 5) “*Properties of n-type ZnN thin films as channel for transparent thin film transistors*”,
E. Aperathitis, V. Kambilafka, M. Modreanu,
Thin Solid Films 518 (2009) 1036-1039, DOI: 10.1016/j.tsf.2009.01.155.
 - 6) “*Transparent p/n diode device from a single zinc nitride sputtering target*”,
V. Kambilafka, A. Kostopoulos, M. Androulidaki, K. Tsagaraki, M. Modreanu and
E. Aperathitis,
Thin Solid Films 520 (2011) 1202-1206, DOI: 10.1016/j.tsf.2011.06.072.
 - 7) “*Study of low temperature rf-sputtered Mg-doped vanadium dioxide thermochromic films deposited on low-emissivity substrates*”,
E. Gagaoudakis, I. Kortidis, G. Michail, K. Tsagaraki, V. Binas, G. Kiriakidis, E. Aperathitis,
Thin Solid Films 601 (2016) 99-105, DOI: 10.1016/j.tsf.2015.11.007.
 - 8) “*On the growth of transparent conductive oxide ternary alloys Zn-Ir-O (ZIRO) by the means of rf magnetron co-sputtering*”,
G. Michail, V. Kambylafka, I. Kortidis, K. Tsagaraki, M. Androulidaki, G. Kiriakidis, V. Binas, M. Modreanu, E. Aperathitis,
Thin Solid Films 617 (2016) 3-8, DOI: 10.1016/j.tsf.2016.02.002.
 - 9) “*Low temperature rf-sputtered thermochromic VO₂ films on flexible glass substrates*”,
E. Gagaoudakis, G. Michail, E. Aperathitis, I. Kortidis, V. Binas, M. Panagopoulou, Y. S. Raptis, D. Tsoukalas, G. Kiriakidis,
Adv. Mat. Lett. 8 (2017) 757-761.
 - 10) “*Room Temperature p-Type NiO Nanostructure Thin Film Sensor for Hydrogen and Methane Detection*”,
E. Gagaoudakis, G. Michail, V. Kampylafka, K. Tsagaraki, E. Aperathitis, K. Moschovis, V. Binas, and G. Kiriakidis,
Sensor Letters, 15 (2017) 1-5, DOI: 10.1166/sl.2017.3864.