

CURRICULUM VITAE

Dr., MSc KONSTANTINOS (KOSTAS) PAPAGELIS
ASSISTANT PROFESSOR
DEPARTMENT OF PHYSICS
UNIVERSITY OF PATRAS

MAY 2016

SHORT CV

NAME : MSc, Dr. Konstantinos Papagelis
DATE AND PLACE OF BIRTH: 01-11-1968; Athens, Greece
MARITAL STATUS: Married, 2 children
TELEPHONE NO: +30 2610-969923
e-MAIL: kpapag@upatras.gr, kpapag@iceht.forth.gr

SUMMARY OF ACTIVITIES

- Assistant Professor, Materials Science Department, University of Patras, since 2010.
- Researcher for 4 years in total at the universities of Sussex (UK), Bristol (UK), Regensburg (Germany) and TU (Berlin).
- Experimental and theoretical investigation of the optical and vibrational properties of condensed matter with emphasis on carbon based nanomaterials (fullerenes, carbon nanotubes and graphene). Over the last seven years focus on the optical, electronic, vibrational and mechanical properties of two-dimensional materials including single- and multi-layer graphenes, BN, MoS₂ and WS₂.
- Award of the John S. Latsis Public Benefit Foundation (2011).
- Principal investigator in GRAPHENE FET FLAGSHIP (<http://www.graphene-flagship.eu/>), work package «Polymer Composites» (WP 14). Significant experience in writing, coordinating and managing research proposals for projects funded by national and European resources (budget 13M€).
- Current research group composed by 2 master students, 4 PhDs and 4 post-doctoral researchers (web page: <http://molecularmaterials.upatras.gr/>).
- Supervising and co-supervising 29 undergraduate and 13 postgraduate diplomas, 2 awarded PhDs and 3 in progress.
- Oral and poster presentations at 150 international and national conferences (151 poster, 98 oral from which 34 invited speeches).
- 100 publications in international refereed journals (indicative: Nature, Nature Communications, Nano letters, ACS NANO, Small, Macromolecules, Journal of Physical Chemistry C), 1 review article (Progress in Polymer Science) and 4 book chapters (Wiley, Royal Society of Chemistry και Springer-Verlag). **Eight common publications and six conference proceedings with Nobel in Physics Laurette Prof. Novoselov and Prof. A. Geim (Univ. of Manchester, UK)**
- Chairman and Organiser of the international conference GraphEL, 4 Summer Schools and 1 Research Meeting.
- Collaborating faculty member at the Institute of Chemical engineering Sciences - Foundation for Research & Technology-Hellas (FORTH/ICE-HT). Founding member of «FORTH GRAPHENE CENTRE» (<http://graphene.forth.gr/>).
- Editorial Board Member of the Journal Scientific Reports (Nature Publishing Group)
- Over 5000 citations.

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1. BIOGRAPHICAL DATA - STUDIES – PROFESSIONAL EXPERIENCE

1A. Personal details

Name	M.Sc, Dr Konstantinos (or Kostas) Papangelis (or Papangelis)
Current Position	Assistant Professor, Materials Science Department, University of Patras
Date and place of Birth	1st November 1968, Athens, Greece
Nationality	Greek
Army service	Fulfilled (9/1997-3/1999)
Marital Status	Married, two children
Work address	Materials Science Department, University of Patras, 26504 Rio, Patras 0030 -2610 -969926
e-mail	kpag@upatras.gr, kpag@iceht.forth.gr

1B. Education

March 1993	Diploma in Physics (BSc.), Physics Department, Aristotle University of Thessaloniki, Greece Diploma Thesis: “ <i>Vacuum annihilation and discrete symmetries study of the orthopositronium system</i> ” Supervisors: Ass. Prof. S. Dedousis and M. Chardalas
December 1998	Postgraduate studies in “Physics of Materials” (M.Sc.), Physics Department, Aristotle University of Thessaloniki, Greece (degree: Excellent) Master Thesis: “ <i>Normal mode determination of the Rare Earth Aluminum Garnets (RE₃Al₅O₁₂)</i> ” Supervisor: Ass. Prof. G. Kanellis
January 2001	Doctor of Sciences degree (Ph.D.), Physics Department, Aristotle University of Thessaloniki, Greece (degree: Excellent) Thesis: “ <i>High pressure Raman study and lattice dynamics of the Rare Earth Aluminum Garnets (RE₃Al₅O₁₂)</i> ” Supervisor: Prof. S. Ves

1C. Professional experience and positions

01/1995-06/1995	Visiting Researcher at the Laboratory of Optical Spectroscopy (Prof. W. Gebhardt), University of Regensburg (Regensburg, Germany).
01/2001-08/2001	Researcher at the Physics Department, Aristotle University of Thessaloniki (Thessaloniki, Greece).
09/2001-12/2003	Postdoctoral Researcher at the laboratory of Prof. K. Prassides,

	School of Chemistry, Physics and Environmental Sciences, University of Sussex (Brighton, UK).
04/2004-08/2005	Contract Lecturer at the Materials Science Department, University of Patras (Patras, Greece). Frequent user of the following large research facilities: a) European Synchrotron Radiation Facility (ESRF), Grenoble (France), for powder X-ray diffraction measurements under variable temperature (2-1200K) or pressure (0-30 GPa). b) Institute Laue-Langevin (ILL), Grenoble (France), ISIS Rutherford Appleton Laboratory, Oxford (UK) and Los Alamos Neutron Science Center (LANSCE), Los Alamos (USA) for elastic and inelastic neutron measurements. c) Paul Scherrer Institut (PSI), Villigen (Switzerland) για πειράματα φασματοσκοπίας μ^+ SR (Muon Spin Relaxation - Rotation) magnetic and superconducting materials.
08/2005 – 01/2010	Lecturer at the Materials Science Department, University of Patras (Patras, Greece).
13/07/2006-01/09/2006 01/04/2007-15/04/2007 20/04/2008-04/05/2008 12/07/2008-01/09/2008 11/07/2009 -01/09/2009 16/02/2010- 21/02/2010 26/03/2010- 11/04/2010 (6 months in total)	Visiting Researcher at the Computational Materials Chemistry group of Prof. N. Allan, Chemistry Department, Bristol University (Bristol, UK).
09/2008-03/2009 (sabbatical), 05/07/2010- 05/09/2010 (DAAD), 16/04/2011-22/04/2011	Visiting Researcher at the laboratory of Prof. Thomsen, Technische Universität Berlin (Berlin, Germany).
April 2010 – today	Assistant Professor at the Materials Science Department, University of Patras (Patras, Greece).
15/04/2015-19/04/2015 13/07/2016-27/07/2016	Visiting Scientist at the Research Group of N. Pugno, University of Trento, Department of Civil, Environmental and Mechanical Engineering (Trento, Italia).
28/12/2016-	Assistant Professor at the Physics Department, University of Patras (Patras, Greece).

1D. Prizes/Honors

1994-1997	Three and a half years fellowship from the Greek Scholarship Foundation, I.K.Y (after national examinations).
2001	Competitive M. Curie individual fellowship from the European Commission for two years (HPMF-2001-01435) <i>High-T_c boride superconductors</i>
2003	Contribution to European Synchrotron Radiation Facility (E.S.R.F.) Highlights (Page: 38-40).

- 2004 Common publication with Prof. J. Akimitsu (Aoyama-Gakuin University, Japan) who discovered the superconductivity of 39 K in MgB₂.
- 2005 Competitive M. Curie European reintegration grant for one year (MERG-CT-2004-513615)
Optical properties of MgB₂-based superconductors
- 07/2010 Visiting Faculty Member the Institute of Chemical engineering Sciences - Foundation for Research & Technology-Hellas (FORTH/ICE-HT).
- 05/07/2010-05/09/2010 Competitive research grand from Deutscher Akademischer Austauschdienst (DAAD)
Novel materials based on carbon nanotubes and graphene: optical and mechanical properties
- 2009- 8 Journal articles and 8 conference proceedings with co-authors Prof. A. Geim and Prof. K. Novoselov (University of Manchester, UK), Nobel Laureates in Physics in 2010
- 01/01/2011-12/12/2011 Award of the John S. Latsis Public Benefit Foundation for the project
Mechanical behaviour of two-dimensional crystals: The case of graphene
In the research team participates Prof. K. Novoselov (Nobel Prize in Physics 2010)
- 01/2013 Collaborating faculty member at the Institute of Chemical engineering Sciences - Foundation for Research & Technology-Hellas (FORTH/ICE-HT).
- 09/2013 Member of the Crete Center for Quantum Complexity and Nanotechnology (CCQCN) (<http://qcn.physics.uoc.gr/>).
- 09/2016 Editorial Board Member of the Journal Scientific Reports (Nature Publishing Group)

1E. Other professional activities

Article reviewer in international scientific journals including: Physical Review Journals, ACS NANO, Carbon, JACS, Physical Chemistry Chemical Physics, Physica C: Superconductivity and its Applications, Journal of Physics and Chemistry of Solids, Materials Science and Engineering B, Journal of Physics: Condensed Matter, Journal of Physics D: Applied Physics, Journal of Raman Spectroscopy

Referee of reseach proposals submitted to: i) National Science Centre, Krakov, Poland and ii) Qatar National Research Fund (QNRF), Qatar foundation, Qatar.

Proposal Evaluator of the Marie Skłodowska-Curie Action H2020-MSCA-COFUND-2015.

Expert monitor of the Marie Curie Actions FP7-PEOPLE-2013/2012-CIG and FP7-PEOPLE-2010-RG.

Participation in evaluation groups of GGET/EYΔE-ETAK.

Evaluation of the research performance of Dr Jianhua Zou, postdoctoral research associate (NSTC-AMPAC, University of central Florida), in order to the Immigration office classified his permanent residency application under the category of ‘Alien of extraordinary ability’.

External examiner of 2 PhD thesis at the Institut für Festkörperphysik (TU, Berlin)

Languages: English (C2-Proficiency level).

2. EDUCATIONAL ACTIVITY

2A. Undergraduate Courses taught

Materials Science Department, University of Patras

Spring Semester
2004-05 *Material Science I*

Spring Semester
2004-05, 2005-06 2006-
2007 *Laboratory I of Materials Science*

Winter Semester
2011-2012 *Material Science II*

Winter Semester
2006-07, 2007-08, 2008-
09, 2009-10, 2010-11,
2011-12, 2012-13, 2013-
2014, 2015-2016, 2015-
2016 *Laboratory II of Materials Science*

Winter Semester
2004-05, 2005-2006 *Material Science V*

Spring Semester
2006-07, 2007-08, 2008-
09, 2009-10, 2010-11,
2011-12, 2012-13, 2013-
2014, 2015-2016

Winter Semester
2004-05, 2005-2006 *Laboratory V of Materials Science*

Spring Semester
2006-07, 2007-08, 2008-
09, 2009-10, 2010-11,
2011-12, 2012-13, 2013-
2014, 2015-2016

Winter Semester
2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11.

Laboratory I of Physics

Spring Semester
2004-05

Laboratory II of Physics

Winter Semester
2006-07, 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2012-13, 2013-2014, 2015-2016, 2016-2017

Laboratory III of Physics

Spring Semester
2005-2006, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2012-13, 2013-2014, 2015-2016

Study of Materials Structure with Scattering Techniques

2B. Graduate Master Courses taught

Materials Science Department, University of Patras, Graduate Masters Programme in «Material Science»

Winter Semester
2006-07, 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2012-13, 2013-2014, 2015-2016, 2016-2017

Experimental techniques in materials study I (Topics: Raman, Infrared and UV-Vis spectroscopies).

Winter Semester
2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2012-13, 2013-2014, 2015-2016

Experimental techniques in materials study II (Topics: selected topics on Raman, Infrared and UV-Vis spectroscopies).

Winter Semester
2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2012-13, 2013-2014, 2015-2016

Molecular Materials I (Topics: Molecular interactions, Fullerenes and derivatives, Carbon Nanotubes and graphene).

Spring Semester
2013-14, 2014-15, 2015-2016

Molecular Materials II (Technology and characterization of flexible Flat Panel Displays, applications of graphene based materials).

Physics Department, Aristotle University of Thessaloniki, Graduate Masters programme in "Physics of Materials"

Winter Semester
1996-1997, 1999-2000,
2000-2001

Laboratory of Materials Characterization I

2C. Diploma Theses supervision

1. Per Holting, *Structural and electronic properties of MgB₂-based superconductors*, Department of Chemistry, University of Sussex (Brighton), June 2003 (co-supervision with Prof. K. Prassides).
2. Takeshi Nakagawa, *Lanthanide-Based C₆₀ Fullerenes*, Department of Chemistry, University of Sussex (Brighton), Department of Chemistry, March 2003 (co-supervision with Prof. K. Prassides).
3. Anna Perdikaki, *Vibrational spectroscopy of carbon nanotubes*, Department of Materials Science, University of Patras, June 2006 (co-supervision with Prof. C. Galiotis)
4. Athanasia Paloumpi, *Raman Study of K_xBa_{6-x}C₆₀ (x=0,1,2,3,4,6) fullerenes*, Department of Materials Science, University of Patras, June 2007.
5. Sozon Vasilakos, *Structure and properties of high molecular weight polyethylene fibres*, Department of Materials Science, University of Patras, September 2007 (co-supervision with Prof. C. Galiotis).
6. Aliko Gavrilaki, *Study of the vibrational properties of single and double walled carbon nanotubes*, Department of Materials Science, University of Patras, September 2007.
7. Dionisios Grapsas, *Raman Spectroscopy of Strained Silicon Substrates*, Department of Materials Science, University of Patras, September 2008.
8. O. Garcia, supervision of his diploma Thesis (04/04/2008-08/08/2008) in collaboration with Prof. Jean-François Gerard (Institut National des Sciences Appliquées de Lyon, CNRS, Villeurbanne, France).
9. Simos Papazoglou, *Synthesis, characterization and applications of chemically modified carbon nanotubes*, Department of Materials Science, University of Patras, February 2009 (co-supervision with contract Lecturer D. Tasis).
10. Athanasios Pountzas, *Synthesis and characterization of superconducting MgB₂*, Department of Materials Science, University of Patras, February 2009.
11. Argiris Kostakis, *Thermomechanical study of model composite materials*, Department of Materials Science, University of Patras, September 2009.
12. Koumasi Antri, *Vibrational and electronic properties of graphene*, Department of Materials Science, University of Patras, June 2010.
13. Theodosios Skaltsas, *Carbon nanotube aerogels*, Department of Materials Science, University of Patras, September 2010 (co-supervision with contract Lecturer D. Tasis).
14. Aleksandra Gerboursa, *Synthesis and characterization of thin films deposited onto polymer substrates*, Department of Materials Science, University of Patras, September 2010 (co-supervision with Assoc. Prof. P. Pouloupoulos).
15. Athanasia Charalampous, *Graphene production, optical visibility and related properties*, Department of Materials Science, University of Patras, June 2011.

16. Nicolaos Delikoukos, *Carbon based nanomaterials*, Department of Materials Science, University of Patras, September 2011.
17. Panagiotis Spiliopoulos, *Chemical exfoliation of graphene and applications*, Department of Materials Science, University of Patras, February 2011 (co-supervision with contract Lecturer D. Tasis).
18. Efthimios Parisis, *Electronic properties of graphene*, Department of Materials Science, University of Patras, June 2012.
19. Sotiria Aleksandri, *Graphene lattice dynamics*, Department of Materials Science, University of Patras, September 2012.
20. Christos Mavrokefalos, *Hydrothermal deposition of noble metals on carbon nanostructures*, Department of Materials Science, University of Patras, February 2013 (co-supervising with Dr D. Tasis and Dr G. Avgouropoulos).
21. Aris Sgouros, *The influence of point defects on the phonon spectrum of graphene*, Department of Materials Science, University of Patras, February 2013 (co-supervising with Lecturer G. Kalosakas and Assoc. Prof. M. Sigalas).
22. Ioanna Mita, *Elastic and inelastic light scattering in graphene*, Department of Materials Science, University of Patras, March 2014 (co-supervision with Assoc. Prof. M. Sigalas).
23. Vasilis Trikalitis, *Growth of nanocrystalline materials inside carbon nanotubes*, Department of Materials Science, University of Patras, September 2013 (co-supervision with Dr S. Giannopoulos).
24. Aleksandra Paksinou, *Synthesis, transfer and characterization of graphene*, Department of Materials Science, University of Patras, September 2013.
25. Konstantinos Doukakis, *Graphene deposition onto shape memory alloy materials*, Department of Materials Science, University of Patras, in progress.
26. Konstantinos Vizas-Asimakopoulos, *Synthesis and characterization of polymer fibres reinforced with carbon nanotubes*, Department of Materials Science, University of Patras, in progress.
27. Manolaki Vasiliki, *Synthesis and characterization of flexible graphene films*, Department of Materials Science, University of Patras, in progress.
28. Christos Zachariadis, *Polymer composite materials based on graphene oxide and carbon nanotubes*, Department of Materials Science, University of Patras, June 2016.
29. Arian Feizoula, *Solar energy conversion into electricity by means of thermoelectric generator*, Department of Materials Science, University of Patras, in progress (co-supervision with Dr V. Karoutsos).

2D. MSc Supervision

1. Dimitris Kastanis, *Synthesis and characterization of carbon nanotube reinforced polymer composites*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, June 2008.
Member of the supervisory committee.

2. Foteini Ravani, *Study of the surface chemistry of carbon based composite materials*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, June 2009.
Member of the supervisory committee.
3. Georgios Trakakis, *Mechanical properties of nanocomposite materials*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, March 2010.
Member of the supervisory committee.
4. Epaminondas Orfanoudakis, *Self-healing polymeric materials): production and properties*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, December 2013.
Member of the supervisory committee.
5. Lambros Seremetis, *Graphene reinforced polymer composite materials*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, December 2013.
Member of the supervisory committee.
6. Nicolaos Delikoukos, *Composite materials with carbon nanotubes and graphene*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, March 2015.
Supervisor.
7. Georgios Paterakis, *Photovoltaic devices using polymeric materials and graphene multi-layers*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, March 2015.
Member of the supervisory committee.
8. Efthimios Parisi, *Wrinkles and dynamical properties of mono and bilayer graphene*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, October 2014.
Member of the supervisory committee.
9. Fedon Petropoulos, *Optimization, fabrication and characterization of carbon fibre reinforced composite materials*, Materials Science Department, Graduate Masters Programme on «Material Science», University of Patras, June 2015.
Supervisor.
10. Sotiria Aleksandri, *Simulation of the mechanical properties of boron nitride (BN) nanoribbons for nanocomposite applications*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, April 2016.
Supervisor.
11. Andreas Giannakopoulos, *Nanoparticle based sensing systems*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, March 2016.
Member of the supervisory committee.
12. Spiros Kallivokas, *Statistical and mechanical properties of graphene using Monte Carlo simulations*, Department of Chemical Engineering, University of Patras, March 2016.
Member of the supervisory committee.

13. Antonis Michail, *Synthesis and optical spectroscopy of two-dimensional MoS₂*, Department of Physics, University of Patras, August 2016.
Supervisor (formal supervisor Assoc. Prof. D. Skarlatos)

2E. PhD supervision

1. Georgia Tsoukleri, *Mechanical and spectroscopic study of reinforcing and composite materials based on carbon*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, September 2014.
Member of the supervisory committee.
2. J. A. Valle, visiting PhD candidate (07/10/2010-15/11/2010), in collaboration with Prof. M. Aglada, Department of Materials Science and Metallurgical Engineering, Technical University of Catalonia (UPC), Barcelona, Spain.
3. Supervision of a significant part of the PhD thesis of S. Khachadorian (Prof. C. Thomsen, TU, Berlin) {publications no. 70 και 79}.
4. Georgios Trakakis, *Mechanical properties of nanocomposite materials*, Department of Physics, Interdepartmental Programme in Polymer Science and Technology, University of Patras, December 2014.
Supervisor.
5. Charalambos Androulidakis, *Analytical and experimental investigation of the mechanical behaviour of graphene membranes under the static loading conditions*, Materials Science Department, University of Patras, April 2016.
Supervisor.
6. Stavros Katsiaounis, *Production and optical characterization of graphene structures*, Department of Physics, University of Patras, in progress.
Supervisor (formal supervisor Ass. Prof. L. Palilis).
7. Lambros Seremetis, *Optical spectroscopic study of the interaction between two-dimensional crystals and various substrates*, Department of Physics, University of Patras, in progress.
Supervisor (formal supervisor Assoc. D. Skarlatos).
8. Panagiotis Karakolis, *Resistive memory devices using modified electrode interfaces*, Department of Physics, University of Patras, in progress.
Member of the supervisory committee.
9. Maria Mpikouvaraki, *Environmental applications of graphene and its derivatives*, School of Environmental Engineering, Technical University of Crete, in progress.
Member of the supervisory committee.
10. Ariadni Konstantopoulou, *Computational study of micro- and nano-photonics materials*, Materials Science Department, University of Patras, in progress.
Member of the supervisory committee.

2F. Participation in diploma, master and PhD evaluation committees

1. Participation in the evaluation committees of a large number of diploma and MSc thesis in the Department of Materials Science and the Interdepartmental Programme in Polymer Science and Technology, University of Patras.
2. Evaluator in the MSc thesis of Aggelos Giannakopoulos, *Numerical statistics in honeycomb lattices*, Department of Physics, University of Crete, November 2011.

3. Member of the evaluation committee of the PhD thesis of the Theodore Theodosiou, Department of Mechanical Engineering & Aeronautics, University of Patras, July 2010.
4. Evaluator along with Prof. C. Thomsen of the PhD Thesis S. Khachadorian (18/04/2011, TU, Berlin).
5. Evaluator along with Prof. J. Maultzsch of the PhD thesis of P. May (14/02/2012, TU, Berlin).
6. Evaluator of the MSc thesis of Andreas Giannakopoulos in the Department of Chemistry, Postgraduate studies Programme, University of Patras, March 2016.
7. Member of the evaluation committee of the PhD thesis of the K. Filintoglou, Department of Physics, Aristotle University of Thessaloniki, December 2016.

3. RESEARCH ACTIVITY

3A. Research Interests

Focus on the experimental and theoretical investigation of the optical, vibrational and electronic properties of advanced materials with emphasis on novel allotropes of carbon such as fullerenes, carbon nanotubes and graphene, which are essentially the main building blocks for the development of nanotechnology. Basic component of the research is the understanding and manipulation of materials properties. This can be achieved either physically by varying an external parameter like temperature, pressure, mechanical strain/stress or chemically by modifying the chemical composition or decorating the graphitic surfaces of carbon nanomaterials.

– Current research activities

During the last seven years focused on the experimental and theoretical investigation of properties such as vibrational, electronic, optical and mechanical of graphene nanostructures (single-, bi-, tri- and multi-layer graphene) and various two-dimensional crystals (BN, MoS₂, WS₂). Also, special attention has been paid in the investigation of embedded two-dimensional materials of atomic thickness into model polymeric nanocomposites as well as in the production of high volume fraction carbon nanotube nanocomposites based on the buckypaper approach. More specifically:

Material synthesis

1. Mechanical exfoliation of two-dimensional crystals. Large-area and high-quality graphene flakes (~ 200 μm).
2. Chemical vapour deposition technique for graphene and MoS₂ fabrication.
3. Application of transferring techniques such as PMMA, electrochemical, lamination of two-dimensional crystals onto different substrates (semiconducting, metallic, shape memory alloys, polymers).
4. Fabrication of thin sheets of carbon nanotubes (buckypapers) with adjustable porosity via the usage of various solvents.
5. Fabrications of high volume fraction carbon nanotube polymer nanocomposites with enhanced electrical and mechanical properties using the Resin Film Infusion method.

Optical spectroscopy of nanomaterials

1. Raman, photoluminescence and absorption under high hydrostatic pressures (0-30 GPa), as a function of temperature (1.8 - 900 K) and mechanical loading (uniaxial, biaxial).
2. Raman, Photoluminescence mapping and imaging.
3. Atomic Force Microscopy (AFM) in combination with Raman spectroscopy. Tip Enhanced Raman Scattering {in progress}.
4. Pump and probe Raman spectroscopy. Direct determination of the lifetime of G Raman active mode (related to the phono-phonon interactions) and its dependence on charge doping, number of layers, temperature and mechanical loading.

Study of the variation of vibrational, electronic and optical properties as well as the induced phase transitions (structural and electronic) of two-dimensional materials (graphene, BN, MoS₂, WS₂) under the influence of physical and chemical perturbations such as

1. Mechanical deformation (uniaxial, biaxial) and high hydrostatic pressure.
2. Axial compressive strain in model composites reinforced with two-dimensional crystals. Determination of critical buckling strain.
3. Temperature dependence (1.8 – 600 K).
4. Charge doping and chemical modifications.

Theory and simulations

1. Calculations of phonon properties (dispersion curves, density-of-states) using molecular dynamics and first principles methods.
2. Calculations of mechanical properties of graphene and boron nitride crystals and nanoribbons by means of molecular dynamics (LAMMPS Molecular Dynamics Simulator) and first principles.

Graphene and carbon nanotube nanocomposites

1. Mechanical behaviour of flexible graphene-based flat panel display.
2. Lithography of CVD graphene using ultra-short pulsed laser beams with application in optical memories (research grand GRAPHEVA).
3. Mechanical load transfer in polymer-nanoinclusion interfaces.
4. Raman mapping of stress or strain within polymer composites.
5. Influence of uniaxial and biaxial deformation in model polymer composites.
6. Mechanical and electrical response of high volume fraction carbon nanotube nanocomposites.

– Other research activities

In the past we have studied the optical, vibrational, electronic, structural, magnetic and superconduction properties of technologically important materials such as

- a. Fullerite C₆₀ and its derivatives (fullerenes).
- b. Carbon nanotubes (pristine or chemically modified), nanotube yarns, polymeric fibres and carbon fibres.
- c. Hybrid materials based on chemically modified carbon nanotubes.
- d. Rare earth Al/Ga Garnets (RE₃D₅O₁₂ RE:Rare earth, D:Al ή Ga) and scheelite (ABO₄) compounds.
- e. II-IV and III-V semiconductors (binary, ternary, heterostructures), silicon nanowires and strained Si.
- f. MgB₂ based superconductors and Kevlar fibres.

Materials Synthesis

1. Solid state chemistry. Handling and preparation of air and moisture sensitive samples.
2. Covalent (e.g. polymers) and non-covalent (e.g. pyrene derivatives) decoration of the graphitic network of carbon nanotubes.

Experimental techniques for material characterization and investigation

1. Raman and Photoluminescence spectroscopy under high pressure and various temperatures (1.8-900 K).
2. UV- vis - IR and fluorescence spectroscopy.
3. Raman spectroscopy as a tool for stress or strain measurements in carbon nanotubes, graphenes, fibres and their composites.
4. Design and testing of novel remote fibre optic Raman micro-probes.
5. X-Ray Diffraction and High Resolution Synchrotron X-Ray diffraction (European Synchrotron Radiation Facility (ESRF), Grenoble (France)) at various pressures and temperatures to study the crystal structure and phase transitions of crystalline solids.
6. Elastic and Inelastic Neutron scattering, to investigate the crystal and magnetic structure as well as the vibrational properties of materials {Institute Laue-Langevin (ILL), Grenoble (France), ISIS Rutherford Appleton Laboratory (UK), Los Alamos Neutron Science Center (LANSCE), Los Alamos (USA)}.
7. Magnetic characterization of materials using SQUID magnetometer (dc and ac susceptibility measurements).
8. μ^+ SR (Muon Spin Relaxation-Rotation) spectroscopic studies of magnetically ordered Fullerenes and High- T_c Boride superconductors (Paul Scherrer Institute (PSI), Villigen, Switzerland).
9. Static (MTS, Hounsfield, Instron) and Dynamic (Q800, TA Instruments) mechanical characterization.
10. Microscopies SEM/TEM/AFM (Basic principles, sample preparation and images interpretation).
11. X-Ray and Ultraviolet Photoelectron Spectroscopy (XPS, UPS) και Nuclear Magnetic Resonance (NMR) {ability to treat and interpret spectra}.

Theory and simulation of materials

1. Software development to understand the lattice dynamics of crystalline solids via empirical force field models (Born-von Kármán model, rigid ion model, shell model).
2. Application of Group Theory to study vibrational and electronic properties of solids
3. Experience with the empirical package GULP (General Utility Lattice Program) to calculate the phonon properties of materials.
4. Crystal structure analysis using the Rietveld method (GSAS, FULLPROF and CERIUS programs).
5. Experience with first principles calculations based on Density Functional Theory using the codes SIESTA (Spanish Initiative for Electronic Simulations with Thousands of Atoms), Quantum ESPRESSO (opEnSource Package for Research in Electronic Structure, Simulation and Optimization) and CASTEP (Cambridge Serial Total Energy Package). Applications include vibrational and electronic properties of solids.

3B. Current research group

Post-doctoral (4): Nikos Chourdakis, Emmanuel Koukaras, George Anagnostopoulos, Dimitrios Anestopoulos

PhDs (4): Stavros Katsiaounis, Nicolaos Delikoukos, Lambros Seremetis, Georgos

Trakakis

Masters (2): Antonis Michail, Sotiria Aleksandri

Information about the research infrastructure can be found in the web-page:

<http://molecularmaterials.upatras.gr/>

3C. Research Grants

- 01/11/1999-31/12/1999 BRITE EURAM III (BRPR-CT96-026), EU
Deployment of In-Situ Monitoring Techniques for the Tailoring Thin Film Properties for Specific Advanced Industrial Applications
Coordinator: Prof. S. Logothetidis
Contractor: Physics Department, AUTH
- 01/02/2000-31/08/2001 PENED 99 (99ED/62), GGET
Σύμπλοκα μεταφοράς φορτίου και υδρίδια φουλερενίων: επίδραση υψηλών πιέσεων και θερμοκρασίας
Coordinator: Prof. S. Ves
Contractor: Physics Department, AUTH
- 01/04/2005-31/03/2006 Marie Curie Reintegration Grant (MERG-CT-2004-513615), EU
Optical properties of MgB₂- based superconductors
Coordinator: Prof. C. Galiotis
Total budget: 40.000€.
Contractor: Materials Science Department, UPATRAS.
- 12/2005-12/2008 Scientific and Technological Cooperation between RTD organizations in Greece and USA, GGET
Process-induced strain modification in strained silicon layers and influence on device performance
Coordinator: Dr C. Tsamis
Total budget: 60.000€.
Contractor: Institute of Microelectronics, NCSR DEMOKRITOS
- 01/06/2006-01/06/2010 Marie Curie Host Fellowships for the Transfer of Knowledge (MTKD-CT-2005-029876), EU
High volume fraction nanocomposites incorporating modified carbon nanotube reinforcements
Coordinator: Prof. C. Galiotis
Total budget: 760.000€.
Contractor: FORTH/ICE-HT
- 01/06/2004-01/06/2008 Network of Excellence (NMP3-CT-2004-500361), EU
Nanostructured and Functional Polymer-based Materials and Nanocomposites (NANOFUN-POLY)
Coordinator: Prof. J. M. Kenny, University of Perugia
Total budget: 6.6 M€ (FORTH/ICEHT:1.167.328€).
Contractor: INSTM, Italy
- 01/05/2007-01.05/2010 K. Karatheodoris grant, Research Committee, University of Patras
Chemical modification of carbon nanotubes: characterization spectroscopic study and applications in nanocomposites

- Coordinator: Ass. Prof. K. Papagelis
Total budget: 24.000€.
Contractor: Materials Science Department, UPATRAS
- 2009-2010 University of Patras Research Network, Research Committee,
University of Patras
NANO - MAterials and DEvices (NANO- DEMA)
Total budget: 9.000€.
- 01/02/2010 - 31/01/2013 K. Karatheodoris grant, Research Committee, University of
Patras
*Front – End processes of emerging Germanium CMOS
Γερμανίου*
Coordinator: Ass. Prof. D. Skarlatos
Total budget: 33.000€.
Contractor: Physics Department, UPATRAS
- 01/01/2011-12/12/2011 Competitive research project from Public Benefit Foundation
John S. Latsis.
*Mechanical behaviour of two-dimensional crystals: The case of
graphene*
Coordinator: Prof. C. Galiotis
Total budget: 12.000€.
Contractor: FORTH/ICE-HT
- 01/04/2011-31/03/2012 Research funding from FORTH for the establishment of
Graphene Center
Coordinator: FORTH/ICE-HT
Total budget: 100.000€.
Contractor: FORTH/ICE-HT
- 01/03/2011-30/02/2014 PHOSIL, ERA-NET LEAD ERA 2010-2015, EU
*Enabling Energy Efficient and Economic Photovoltaic Cell
Architectures based on Advanced Laser Processing of Silicon*
Coordinator: Prof. C. Galiotis
Contractor: FORTH/ICE-HT
Total budget: 212.000€.
- 01/09/2011-01/09/2014 Research Resources Support Program of Western Greece
(ESPA).
Contractor: FORTH/ICEHT
Budget: 150.000€.
- 01/02/2012-31/07/2015 ‘THALES’ research grand, General Secretariat for Research
and Technology of the Ministry of Education, Culture and
Sport
*Graphene and its nanocomposites: production, properties and
applications*
Coordinator: Prof. C. Galiotis
Contractor: FORTH/ICE-HT
Budget: 600.000€.
- 15/09/2012-14/09/2015 National funding of Greek proposals positively evaluated in
the 4th call of ERC Grant Schemes (GSRT, Ministry of

- Development)
Deformation, Yield and Failure of Graphenes and Graphene-based Nanocomposites
 Coordinator: Prof. C. Galiotis
 Contractor: FORTH/ICE-HT
 Budget: 1.271.000€.
- 15/09/2012-14/09/2015 IKYDA 2013 an integrated action program between German Academic Exchange Service (DAAD) and the Greek State Scholarship Foundation (I.K.Y)
Nanocarbon based polymer nanofibers and buckypapers: revolutionary novel filler for composite industry
 Coordinator: Ass. Prof. K. Papagelis
 Budget: 10.000€.
- 01/10/2013-31/03/2016 GRAPHENE (Project Number: 604391), FET Flagships (FP7-ICT-2013-FET-F), EU
Graphene-Based Revolutions in ICT and Beyond
 Contractor: FORTH/ICEHT
 Budget: 454.163€.
- 01/06/2013-31/05/2018 ERC Advanced Grant (Grand agreement:321124), European Research Council, EU
Tailoring graphene to withstand large deformations
 Coordinator: Prof. K. Galiotis
 Contractor: FORTH/ICE-HT
 Budget: 2.025.000€.
- 09/2013-09/2015 REGPOT (Grant agreement:316165), EU
Crete Center for Quantum Complexity and Nanotechnology
 Coordinator: Prof. G. Tsironis
 Contractor: Physics Department, University of Crete
 Budget: 5.000.000€.
- 01/11/2013-/2015 NEWSPEC Large-scale integrated project (Grant agreement:604168), EU
New cost-effective and Sustainable PolyEthylene based Carbon fibres for volume market applications
 Coordinator: Matteo Falasconi
 Contractor: Warrant Group Srl (Ιταλία)
 Budget: 7.393.755€ (FORTH/ICE-HT: 1.078.016€).
- 01/10/2013-31/09/2015 INSOLCELL «bilateral Research and Technology bilateral collaboration Greece-Germany 2013-2015» , ESPA 2007-2013
Innovative materials for solar cell design and demonstration
 Coordinator: Prof. P. Lianos
 Contractor: FORTH/ICEHT
 Budget: 244.970€.
- 01/01/2014-01/09/2015 GRAPHEVA «Aristeia II» research programme implemented in the frame of the Operational Program «Education and Lifelong Learning» and co-financed by the EU and Greek national funds
Graphene physics in the time domain and application to 3D

optical memories
Coordinator: Prof. K. Papagelis
Contractor: FORTH/ICEHT
Budget: 276.000€.

- 14/06/2014- 30/11/2015 2DNanoMechanics «bilateral Research and Technology collaboration Greece-Israel 2013-2015» , NSRF regions at the centre of development
Nanomechanics of atomic thickness membranes: the case of two dimensional crystals
Coordinator: INASCO
Contractor: FORTH/ICEHT
Budget: 352.077€.
- 01/04/2016-01/09/2016 GRaZOR bilateral collaboration under confidentiality agreement, funded by BIC VIOLEX
Investigation of graphene as an agent for improving the frictional and wear properties in razor blades
Coordinator: K. Papagelis and J. Parthenios
Contractor: FORTH/ICEHT
Budget: 41.205€
- 01/04/2016-31/03/2018 GRAPHENE CORE 1 (Project Number: 696656), Research & Innovation actions (RIA) (H2020-Adhoc-2014-20), EU
Graphene-Based Disruptive Technologies
Contractor: FORTH/ICEHT
Budget: 340.507€.
- April 2015 GRaZOR industrial collaboration with BIC VIOLEX (non-disclosure agreement), BIC VIOLEX, BICworld, France
Budget: 41.205€.
- 01/04/2016-31/03/2018 3DGraph industrial collaboration with CealTech (non-disclosure agreement)
Budget: 21.390€.

3D. Conference organization

- 03-06/07/2012 Chairman (Session: Graphene & Nanocarbon I) of the 9th International Conference on Nanosciences & Nanotechnologies (NN12), Thessaloniki (Greece).
- 09-12/07/2012 Co-Organizer of the 1st Summer School on ‘Nanomaterials and Devices, Patras (Greece).
(<http://nanodema.upatras.gr/news.php>)
- 16-21/09/2012 Member of the local organizing committee of the 50th European High Pressure Research Group Meeting, Thessaloniki (Greece).
- 23-26/09/2012 Member of the local organizing committee of the 27th Panhellenic Conference on Solid State Physics and Materials Science, Patras (Greece).
- 27-30/09/2012 Co-Organizer and chairman of the European Conference/Workshop on the Synthesis, Characterization and

- Technological Exploitation of Graphene (GrapHEL), Mykonos (Greece).
- 01-03/07/2013 Co-Organizer of the Summer School ‘Graphene: Properties and applications’, FORTH/ICE-HT, Patras (Greece).
(<http://graphenesummerschool2013.iceht.forth.gr>)
- 15-19/07/2013 Chairman of Prof. Thomsen lecture in 2013 Lectures in Physics and Chemistry: Nanoscience and Nanotechnology of Onassis Foundation Science Lectures Series, Heraklion (Greece).
- 14-18/07/2014 Co-organizer and chairman of the Summer School ‘10 years from the discovery of graphene’, Guest of Honor Kostya Novoselov (Nobel Prize in Physics (2010)), Patras (Greece).
- 15-18/06/2015 Co-organizer and chairman of the Summer School ‘1st European course on next generation carbon fibres processing’, Rio Patras (Greece).
- 07-10/07/2015 Chairman of the session ‘Graphene and Related Materials’ of the 12th International Conference on Nanosciences & Nanotechnologies (NN15), Thessaloniki (Greece).
- 26/10/2015 Organizer and chairman of the Research Meeting ‘Graphene: Properties and applications’, FORTH/ICEHT, Patra (Greece).
(<http://graphspect.iceht.forth.gr/>)
- 19-21/10/2016 Member of the conference committee of the International Conference on Chemical Engineering 2016 (ICCE’16), San Fransisco (USA).
- 25-29/09/2017 Member of the local organizing committee of the International Conference GRAPHENE WEEK 2017, Athens (GREECE).

4. SCIENTIFIC WORK

4A. PhD Thesis

1. High Pressure Raman study and lattice dynamics of the rare earth aluminum garnets ($\text{RE}_3\text{Al}_5\text{O}_{12}$).
PhD Thesis, Physics Department, Aristotle University of Thessaloniki, Greece, January 2001.

4B. Publications in refereed journals

1. Temperature and composition dependence of exciton peak positions and band gap energies of $\text{Zn}_{1-x}\text{Mg}_x(\leq 0.19)\text{Se}$ epitaxial films
Phys. Stat. Sol. (b) 204, 685-699 (1997).
R. Pässler, F. Blaschta, E. Griehl, K. Papagelis, B. Haserer, T. Reisinger, S. Ves, and W. Gebhardt.
2. *Pressure-induced charge transfer phase transition in crystalline $\text{C}_{60}*\text{C}_{10}\text{H}_{12}\text{Se}_4*2(\text{CS}_2)$ molecular complex studied by Raman spectroscopy*
Chem. Phys. Lett. 281, 360-365 (1997).

- K. P. Meletov, V. K. Dolganov, N. G. Spitsina, E. B. Yagubskii, J. Arvanitidis, K. Papagelis, S. Ves, and G. A. Kourouklis.
3. *Charge transfer in $C_{60} * TMTSF * 2(CS_2)$ complex at high pressure: a Raman spectroscopic study*
Rev. High Pressure Science and Technology 7, 733-735 (1998).
G. A. Kourouklis, K. P. Meletov, J. Arvanitidis, K. Papagelis, S. Ves, V. K. Dolganov, N. G. Spitsina, and E. B. Yagubskii.
 4. *On the nature of the laser irradiation induced reversible softening of phonon modes in C_{60} single crystals*
Chem. Phys. Lett. 290, 125-130 (1998).
K. P. Meletov, E. Liarokapis, J. Arvanitidis, K. Papagelis, D. Palles, G. A. Kourouklis, and S. Ves.
 5. *Softening of phonon modes in C_{60} crystals induced by laser irradiation: Thermal effects*
JETP 87, 967-972 (1998) (Zh. Eksp. Theor. Fiz. 114, 1785-1794, 1998).
K. Meletov, E. Liarokapis, J. Arvanitidis, K. Papagelis, S. Ves, and G. Kourouklis
 6. *High pressure Raman study of $Lu_3Al_5O_{12}$*
Phys. Stat. Sol. (b) 211, 301-307 (1999).
K. Papagelis, J. Arvanitidis, G. Kanellis, S. Ves, and G. A. Kourouklis
 7. *The role of the intradimer C-C bridge on the stability of $(C_{59}N)_2$: a high pressure Raman study*
Phys. Stat. Sol. (b) 211, 435-441, (1999).
J. Arvanitidis, K. Papagelis, K. P. Meletov, G. A. Kourouklis, K. Prassides, K. Kordatos, F. Wundl, and S. Ves
 8. *Effect of high hydrostatic pressure on the intramolecular modes of $(C_{59}N)_2$*
Phys. Rev B 59, 3180-3183 (1999).
J. Arvanitidis, K. Papagelis, K. P. Meletov, G. A. Kourouklis, S. Ves, K. Kordatos, F. Wudl, and K. Prassides.
 9. *High pressure effects on the Raman spectrum of CsC_{60} polymer*
Physica B 265, 234-238 (1999).
J. Arvanitidis, K. Papagelis, I. Tsilika, G. Kanellis, S. Ves, G. A. Kourouklis, K. Tanigaki, and K. Prassides
 10. *Effect of high hydrostatic pressure on the phonon modes of $Tb_3Al_5O_{12}$ and $Dy_3Al_5O_{12}$ single crystals*
Physica B 265, 277-281 (1999).
K. Papagelis, J. Arvanitidis, G. Kanellis, G. A. Kourouklis, and S. Ves
 11. *Phonons in rare-earth aluminum garnets and their relation to lattice vibration of AlO_4*
Phys. Stat. Sol. (b) 215, 193-198 (1999).
K. Papagelis, G. Kanellis, J. Arvanitidis, G. A. Kourouklis, and S. Ves.
 12. *Comparative Raman study of the 1D and 2D polymeric phases of C_{60} under pressure*
Phys. Stat. Sol. (b) 215, 443-448 (1999).
J. Arvanitidis, K. P. Meletov, K. Papagelis, A. Soldatov, K. Prassides, G. A. Kourouklis, and S. Ves.
 13. *Temperature dependence of exciton peak energies in ZnS , $ZnSe$ and $ZnTe$ epitaxial films*
J. Appl. Phys. 86, 4403-4411 (1999).

- R. Pässler, E. Griebel, H. Riepl, G. Lautner, S. Bauer, H. Preis, W. Gebhardt, B. Buda, D. J. As, D. Schikora, K. Lischka, K. Papagelis, and S. Ves.
14. *The pressure response of Raman active modes of $Tm_3Al_5O_{12}$*
High Pressure Research **18**, 117-123 (2000).
K. Papagelis, J. Arvanitidis, G. Kanellis, G. A. Kourouklis, and S. Ves.
 15. *High pressure study of the 2D polymeric phase of C_{60} by means of Raman spectroscopy*
High Pressure Research **18**, 145-151 (2000).
J. Arvanitidis, K. P. Meletov, G. A. Kourouklis, K. Papagelis, A. Soldatov, K. Prassides, and S. Ves.
 16. *Phonon modes in $Yb_3Al_5O_{12}$: pressure dependence and model calculations*
Phys. Stat. Sol. (b) **223**, 343-347 (2001).
K. Papagelis, G. Kanellis, J. Arvanitidis, S. Ves, and G. A. Kourouklis.
 17. *Raman modes of the two-dimensional tetragonal polymeric phase of C_{60} under high pressure*
J. Chem. Phys. **114**, 9099-9104 (2001).
J. Arvanitidis, K. P. Meletov, K. Papagelis, S. Ves, G. A. Kourouklis, A. Soldatov and K. Prassides
 18. *Infrared lattice spectra of $Tm_3Al_5O_{12}$ and $Yb_3Al_5O_{12}$ single crystals*
J. Phys.:Condens. Matter **14**, 915-923 (2002).
K. Papagelis, G. Kanellis, T. Zorba, S. Ves, and G. A. Kourouklis.
 19. *High pressure effects on the Raman spectrum and the force constants of the rare earth aluminum garnets ($RE_3Al_5O_{12}$)*
J. Phys.:Condens. Matter **14**, 3875-3890 (2002).
K. Papagelis, J. Arvanitidis, G. Kanellis, S. Ves, and G. A. Kourouklis.
 20. *Phase separation in carbon-doped MgB_2 studied by means of alternating current susceptibility measurements*
J. Phys.:Condens. Matter **14**, 7363-7369 (2002).
K. Papagelis, J. Arvanitidis, S. Margadonna, Y. Iwasa, T. Takenobu, M. Pissas and K. Prassides.
 21. *Lattice dynamical properties of the rare earth aluminum garnets ($RE_3Al_5O_{12}$)*
Phys. Stat. Sol. (b) **233**, 134-150 (2002).
K. Papagelis, G. Kanellis, S. Ves, and G. A. Kourouklis.
 22. *High pressure Raman study and lattice dynamics calculations for $SrWO_4$*
J. Phys.:Condens. Matter **14**, 12641-12650 (2002).
D. Christofilos, K. Papagelis, S. Ves, G. A. Kourouklis, C. Raptis.
 23. *μ^+ SR study of carbon-doped MgB_2 superconductors*
Europhys. Lett. **61**, 254-260 (2003).
K. Papagelis, J. Arvanitidis, K. Prassides, A. Schenck, T. Takenobu and Y. Iwasa
 24. *μ SR studies of superconducting $MgB_{1.96}C_{0.04}$*
Physica B **326**, 346-349 (2003).
K. Papagelis, J. Arvanitidis, I. Margiolaki, K. Brigatti, K. Prassides, A. Schenck, A. Lappas, A. Amato, Y. Iwasa and T. Takenobu
 25. *Antiferromagnetic ordering in the expanded $(NH_3)Rb_3C_{60}$ fulleride*
Physica B **326**, 572-576 (2003).

- J. Arvanitidis, K. Papagelis, T. Takenobu, I. Margiolaki, K. Brigatti, K. Prassides, Y. Iwasa, and A. Lappas.
26. *Infrared spectroscopy and lattice dynamical calculations of $Gd_3Al_5O_{12}$, $Tb_3Al_5O_{12}$ and $Lu_3Al_5O_{12}$ single crystals*
J. Phys. Chem. Sol. **64**, 599-605 (2003).
K. Papagelis and S. Ves.
 27. *Pressure evolution of the phonon modes and force constants of $Tb_3Al_5O_{12}$ and $Lu_3Al_5O_{12}$*
Phys. Stat. Sol. (b) 235, 348-353 (2003).
K. Papagelis, J. Arvanitidis, S. Ves, and G. A. Kourouklis.
 28. *The effect of anisotropic intermolecular interactions on the pressure response of polymeric fullerenes*
Phys. Stat. Sol. (b) 235, 369-373 (2003).
J. Arvanitidis, S. Assimopoulos, K. Papagelis, S. Ves, K. Prassides, Y. Iwasa and G. A. Kourouklis
 29. *Inelastic neutron scattering study of the intermolecular vibrational modes of Ba_4C_{60}*
Chem. Phys. Lett. **377**, 125-130 (2003).
K. Papagelis, J. Arvanitidis, K. Prassides, S. Margadonna
 30. *Raman study of Mg, Si, O and N implanted GaN*
J. Appl. Phys. **94**, 4389-4394 (2003).
M. Katsikini, K. Papagelis, E. Paloura and S. Ves
 31. *Temperature-induced valence transition and lattice collapse in samarium fulleride*
Nature (London) **425**, 599-602 (2003).
J. Arvanitidis, K. Papagelis, S. Margadonna, K. Prassides, A. N. Fitch
 32. *Vibrational properties of the rare earth aluminum garnets*
J. Appl. Phys. **94**, 6491-6498 (2003).
K. Papagelis and S. Ves
 33. *Raman spectroscopic study of carbon substitution of MgB_2*
J. Phys. Chem. Sol **65**, 73-77 (2004).
J. Arvanitidis, K. Papagelis, K. Prassides, G. A. Kourouklis, S. Ves, T. Takenobu, and Y. Iwasa
 34. *Evidence of Electron-Phonon Interaction in Al-Substituted $Mg_{1-x}Al_xB_2$*
Journal of Superconductivity: Incorporating Novel Magnetism **17**, 199-203 (2004).
T. Yokoo, T. Muranaka, M. Arai, K. Papagelis, K. Prassides, J. Taylor, S. M. Bennington, *J. Akimitsu* {Ο ερευνητής που ανακάλυψε την υπεραγωγιμότητα στο MgB_2 το 2001}.
 35. *Lattice collapse in mixed-valence samarium fulleride $Sm_{2.75}C_{60}$ at high pressure*
Dalton Transactions **19**, 3144 - 3146 (2004).
J. Arvanitidis, K. Papagelis, S. Margadonna and K. Prassides
 36. *High pressure Raman study of $Y_3Al_5O_{12}$*
Phys. Stat. Sol. (b) **241**, 3149-3154 (2004).
J. Arvanitidis, K. Papagelis, D. Christofilos, H. Kimura, G. A. Kourouklis and S. Ves
 37. *High pressure Raman study of $BaMoO_4$*
Phys. Stat. Sol. (b) **241**, 3155-3160 (2004).

- D. Christofilos, J. Arvanitidis, E. Kampasakali, K. Papagelis, S. Ves and G. A. Kourouklis
38. *Pressure screening in the interior of primary shells in double-wall carbon nanotubes*
Phys. Rev. B **71**, 1254054 (2005) and Virtual Journal of Nanoscale Science & Technology **11**, 12 (2005).
J. Arvanitidis, D. Christofilos, K. Papagelis, K. S. Andrikopoulos, T. Takenobu, Y. Iwasa, H. Kataura, S. Ves and G. A. Kourouklis.
 39. *Negative thermal expansion in the mixed valence ytterbium fulleride, Yb_{2.75}C₆₀*
Chem. Mater. **17**, 4474 -4478 (2005).
S. Margadonna, J. Arvanitidis, K. Papagelis and K. Prassides.
 40. *Double-wall carbon nanotubes under pressure: Probing the response of individual tubes and their intratube correlations*
Phys. Rev. B **72**, 193411 (2005), Virtual Journal of Nanoscale Science & Technology **12**, 63 (2005) and Carbon Nanotubes Monthly **2005(4)**, 81 (2005).
J. Arvanitidis, D. Christofilos, K. Papagelis, T. Takenobu, Y. Iwasa, H. Kataura, S. Ves and G. A. Kourouklis.
 41. *¹¹B NMR study of pure and lightly carbon doped MgB₂ superconductors*
Journal of Superconductivity: Incorporating Novel Magnetism **18**, 521-528 (2006).
M. Karayanni, G. Papavassiliou, M. Pissas, M. Fardis, K. Papagelis, K. Prassides, T. Takenobu and Y. Iwasa.
 42. *Raman study of metallic carbon nanotubes at elevated pressure*
Diamond and Related Materials **15**, 1075-1079 (2006).
D. Christofilos, J. Arvanitidis, C. Tzampazis, K. Papagelis, T. Takenobu, Y. Iwasa, H. Kataura, C. Lioutas, S. Ves, and G. A. Kourouklis.
 43. *Raman study of polycrystalline PbWO₄ under high pressure*
High Pressure Research **26**, 421-425 (2006).
D. Christofilos, E. Efthimiopoulos, J. Arvanitidis, K. Papagelis, S. Ves, and G. A. Kourouklis.
 44. *Second-order Raman study of double-wall carbon nanotubes under high pressure*
Physica Status Solidi (b) **244**, 116-120 (2007).
K. Papagelis, J. Arvanitidis, D. Christofilos, K. S. Andrikopoulos, T. Takenobu, Y. Iwasa, H. Kataura, S. Ves, and G. A. Kourouklis.
 45. *Magnetic ordering in the ammoniated alkali fullerenes (NH₃)K_{3-x}Rb_xC₆₀ (x=2,3)*
J. Phys.:Condens. Matter **19**, 386235 (2007).
J. Arvanitidis, K. Papagelis, Y. Takabayashi, T. Takenobu, Y. Iwasa, M. J. Rosseinsky and K. Prassides.
 46. *Water-soluble carbon nanotubes by redox radical polymerization*
Macromolecular Rapid Communications **28**, 1553-1558 (2007).
D. Tassis, K. Papagelis, M. Prato, I. Kallitsis, C. Galiotis.
 47. *High pressure Raman study of the second-order vibrational modes of single- and double-walled carbon nanotubes*
Physica Status Solidi (b) **244**, 4069-4073 (2007).
K. Papagelis, K. S. Andrikopoulos, J. Arvanitidis, D. Christofilos, C. Galiotis, T. Takenobu, Y. Iwasa, H. Kataura, S. Ves and G. A. Kourouklis.

48. *Covalently functionalized carbon nanotubes as macroinitiators for radical polymerization.*
Physica Status Solidi (b) **244**, 4046-4050 (2007).
K. Papagelis, M. Kalyva, D. Tasis, J. Parthenios, A. Siokou and C. Galiotis.
49. *Colloidal stability of carbon nanotubes in an aqueous solution of phospholipids*
Int. J. Nanomedicine **2**, 761-76 (2007).
D. Douroumis, D. Fatouros, N. Bouropoulos, K. Papagelis, D. Tasis
50. *Oxidized multi-walled carbon nanotube film fabrication and characterization*
Advanced Composites Letters **16**, 243 (2007).
D. Kastanis, D. Tasis, K. Papagelis, J. Parthenios, C. Tsakiroglou and C. Galiotis
51. *Diameter-Selective Solubilization of Carbon Nanotubes by Lipid Micelles*
Journal of Nanoscience and Nanotechnology **8**, 420–423 (2008).
D. Tasis, K. Papagelis, D. Douroumis, J. R. Smith, N. Bouropoulos, and D. G. Fatouros
52. *Chemical Oxidation of Multi Walled Carbon Nanotubes*
Carbon **46**, 833-840 (2008).
V. Datsyuk, M. Kalyva, K. Papagelis, J. Parthenios, D. Tasis, A. Siokou, I. Kallitsis and C. Galiotis {Top cited article of the Journal between 2006 and 2010}.
53. *Novel hybrid materials consisting of regioregular poly(3-octylthiophene)s covalently attached to single-wall carbon nanotubes*
Chemistry – A European Journal **14**, 8715-8724 (2008).
A. A. Stefopoulos, C. L. Chochos, M. Prato, G. Pistolis, K. Papagelis, F. Petraki, S. Kennou and J. K. Kallitsis.
54. *Carbon Nanotubes Decorated with Terpyridine-Ruthenium Complexes*
Journal of Polymer Science Part A: Polymer Chemistry **47**, 2551-2559 (2009).
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61. *N-octyl-O-sulphate chitosan stabilises single wall carbon nanotubes in aqueous media and bestows biocompatibility*
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A. A. Stefopoulos, S. N. Kourkouli, S. Economopoulos, F. Ravani, A. Andreopoulou, K. Papagelis, A. Siokou and J. K. Kallitsis.
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O. Frank G. Tsoukleri, J. Parthenios, K. Papagelis, I. Riaz, R. Jalil, K. S. Novoselov and C. Galiotis.
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A. Fotopoulos, J. Arvanitidis, D. Christofilos, K. Papagelis, M. Kalyva, K. Triantafyllidis, D. Niarchos, N. Boukos, G. Basina, and V. Tzitzios.
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77. *Open structured in comparison with dense multi-walled carbon nanotube buckypapers and their composites*
Composites Science and Technology **77**, 52–59 (2013).
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Journal of Applied Physics **113**, 134307(1-7 pages) (2013).

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82. *Structural Properties of Chemically Functionalized Carbon Nanotube Thin Films*
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Physical Review B **88**, 045418-1-6 (2013).
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J. Phys.: Condens. Matter **26**, 125301 (2014).
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C. Androulidakis G. Tsoukleri, N. Koutroumanis, G. Gkikas, P. Pappas, J. Parthenios, K. Papagelis and C. Galiotis.
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ACS Applied Materilas & Interfaces **7**, 4216-4223 (2015).
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A. P. Sgouros, G. Kalosakas, M. M. Sigalas and K. Papagelis.
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 90. *Deformation of wrinkled graphene*
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 91. *Embedded trilayer graphene flakes under tensile and compressive loading*
2D Materials **7**, 024009 (2015).
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Scientific Reports **5**, 129232; doi:10.1038/srep12923 (2015).
E. N. Koukaras, G. Kalosakas, C. Galiotis and K. Papagelis.
 93. *Epoxidized multi-walled carbon nanotube buckypapers: A scaffold foe polymer nanocomposites with enhanced mechanical properties*

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 96. *Optical detection of strain and doping inhomogeneities in single layer MoS₂*
Applied Physics Letters **108**, 173102 (2016).
A. Michail, N. Delikoukos, J. Parthenios, C. Galiotis and K. Papagelis
 97. *Long-lived discrete breathers in free-standing graphene*
Chaos, Solitons, Fractals **87**, 262-267 (2016).
A. Fraile, E. N. Koukaras, K. Papagelis, N. Lazarides, G. P. Tsironis
 98. *Uniaxial compression of suspended single and multilayer graphenes*
2D Materials, **3**, 025033 (2016).
A. P. Sgouros, G. Kalosakas, C. Galiotis and K. Papagelis
 99. *Mechanical Stability of Flexible Graphene-Based Displays*
ACS Applied Materials & Interfaces, **8** (34), 22605-22614 (2016).
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 100. *Stress and charge transfer in uniaxially strained CVD graphene*
Physica Status Solidi (b), in press.
M. Bousa, G. Anagnostopoulos, Elena del Corro, K. Drogowska, J. Pekarek, L. Kavan, M. Kalbac, J. Parthenios, K. Papagelis, C. Galiotis and O. Frank

4C. Review Articles

1. *Carbon Nanotube-Polymer Composites: Chemistry, Processing, Mechanical and Electrical Properties*
Progress in Polymer Science **35**, 357-401 (2010) {Invited Review Article, Top 25 Hottest Article across all subject areas for 2010 academic year}.
Z. Spitalsky, D. Tasis, K. Papagelis and C. Galiotis

4D. Chapters in books

1. *Carbon nanotube filled polymer composites*
Advances in Polymer Composites – Nano (Volume II), Chapter VIII, Editors: S. Thomas, K. Joseph, S. K. Malhotra, K. Goda and M. S. Sreekala, John Wiley & Sons Ltd. (to be published)
D. Tasis and K. Papagelis
2. *Raman spectroscopy of carbon nanotube-polymer hybrid materials*
Carbon nanotube-polymer composites (Volume 20), Royal Society Nanoscience and Nanotechnology Series, Series Editors: H. Kroto, P. O'Brien and R. Nuzzo, Book Editor: D. Tasis, Royal Society of Chemistry Publishing, (to be published).

K. Papagelis

3. *Axial deformation of monolayer graphene under tension and compression*
Carbon Nanostructures Series, Editors: L. Ottaviano and V. Morandi, ISBN: 978-3-642-20643-6, Springer-Verlag, Berlin-Heidelberg, 87-97 (2012).
K. Papagelis, O. Frank, G. Tsoukleri, J. Parthenios, K. Novoselov and C. Galiotis
4. *Chemical and Optical Aspects of Supported Graphene*
Graphene Science Handbook: Electrical and Optical Properties, Taylor & Francis Group, LLC, a State of Delaware limited liability company, having its principal place of business at 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487, U.S.A
D. Tasis, C. Galiotis and K. Papagelis

4E. Books

1. *Strain Engineering in two-dimensional crystals*
Pan Stanford Publishing Pte. Ltd. (Singapore), in preparation, 200 pages (Invited).
J. Parthenios and K. Papagelis

4F. Peer-reviewed publications in specialized books and conference proceedings

1. *Temperature-induced valence transition in intermediate valence $Sm_{2.75}C_{60}$*
European Synchrotron Radiation Facility scientific highlights 2003, 38-40 (ESRF, Grenoble, France 2003). *Δημοσίευση μετά από επιλογή*.
J. Arvanitidis, K. Papagelis, S. Margadonna, K. Prassides, A. N. Fitch.
2. *Rare Earth Aluminum Garnets: Raman and IR Investigation*
Proceedings of the 16th Serbia and Montenegro National Symposium on Condensed Matter Physics, 288-291 (Sokobanja, Serbia and Montenegro 2004).
S. Ves, K. Papagelis, J. Arvanitidis, D. Christofilos and G. A. Kourouklis.
3. *Phase transitions and optical absorption of $BaMoO_4$ under pressure*
Proceedings of the Joint 20th AIRAPT – 43rd EHPRG Conference, Edited by E. Dinjus and N. Dahmen (Forschungszentrum Karlsruhe, Germany 2005) T10-p100, ISBN 3-923704-49-6.
D. Christofilos, J. Arvanitidis, E. Kampasakali, K. Papagelis, S. Ves, and G. A. Kourouklis.
4. *Raman study of pressure screening effects in double-wall carbon nanotubes*
Proceedings of the Joint 20th AIRAPT – 43rd EHPRG Conference, Edited by E. Dinjus and N. Dahmen (Forschungszentrum Karlsruhe, Germany 2005) T10-p100, ISBN 3-923704-49-6.
J. Arvanitidis, D. Christofilos, K. Papagelis, K. S. Andrikopoulos, G. A. Kourouklis, S. Ves, T. Takenobu, Y. Iwasa, and H. Kataura.
5. *Phonon-drag thermopower of a ballistic semiconducting single-wall carbon nanotube*
American Institute of Physics Conference Proceedings of the 28th International Conference on the Physics of Semiconductors (ICPS 2006), Vol. 893, 1045-1046 (Vienna, Austria 2006). Editors W. Jantsch and F. Schaffler.
M. Tsausidou and K. Papagelis.
6. *Thermal characterization of porous silicon micro-hotplates using IR thermometry*
Proceedings of the 14th International Conference on Solid-State sensors actuators and microsystems (TRANSDUCERS'07 and Eurosensors XXI), Lyon (France), 2271 – 2274 (2007).
R. Triantafyllopoulou, C. Tsamis, S. Chatzandroulis, T. Speliotis, J. Parthenios, K. Papagelis and C. Galiotis.

7. *Study of interfacial phenomena in oxidized strained-Silicon*
 Proceedings of the 8th International Conference on Ultimate Integration on Silicon (ULIS), Leuven (Belgium), 141–144 (2007).
 N. Kelaidis, V. Ioannou-Sougleridis, D. Skarlatos, C. Tsamis, J. Parthenios, K. Papagelis, C. Galiotis, B. Kellerman and M. Seacrist.
8. *Polymer nanocomposites based on CNT buckypapers*
 Proceedings of the 17th International Conference on Composite Materials (ICCM-17), Endinburgh (UK), 2009.
 C. Galiotis, Z. Spitalsky, G. Tsoukleri, G. Trakakis, D. Tasis, C. Krontiras, J. Parthenios, K. Papagelis.
9. *Graphene under uniaxial deformation: A raman study*
 Proceedings of the 3rd International Conference NANOCON 2011, Hotel Voronez IBrno (Czech Republic), 2011.
 O. Frank, G. Tsoukleri, J. Parthenios, K. Papagelis, I. Riaz, K. S. Novoselov, M. Kalbac, L. Kavan, C. Galiotis
10. *Carbon nanotubes buckypapers of controlled porosity and their nanocomposites*
 Proceedings of the 15th European Conference on Composite Materials (ECCM 2012), Venice (Italy), 2012.
 G. Trakakis, D. Tasis, C. Aggelopoulos, J. Parthenios, C. Galiotis and K. Papagelis.
11. *Tensile mechanical properties of embedded single, bi- and tri-layer graphene flakes*
 Proceedings of the 15th European Conference on Composite Materials (ECCM 2012), Venice (Italy), 2012.
 G. Tsoukleri, O. Frank, N. Delikoukos, K. Papagelis, J. Parthenios, K. S. Novoselov, C. Galiotis.
12. *Compression failure of graphene sheets in polymer nanocomposites*
 Proceedings of the 16th European Conference on Composite Materials (ECCM 2014), Seville (Spain), 2014.
 C. Androulidakis, E. N. Koukaras, O. Frank, G. Tsoukleri, D. Sfyris, J. Parthenios, N. Pugno, K. Papagelis, K. S. Novoselov, C. Galiotis.
13. *Stress-transfer at the nanoscale in simply-supported and embedded monolayer graphene/polymer systems*
 Proceedings of the 16th European Conference on Composite Materials (ECCM 2014), Seville (Spain), 2014.
 G. Anagnostopoulos, C. Androulidakis, G. Tsoukleri, J. Parthenios, I. Polyzos, K. Papagelis, C. Galiotis.
14. *Fabrication and properties of polymer nanocomposites based on carbon nanotubes prepregs*
 Proceedings of the 16th European Conference on Composite Materials (ECCM 2014), Seville (Spain), 2014.
 G. Trakakis, D. Tasis, J. Parthenios, C. Galiotis and K. Papagelis

4G. Newspaper articles

1. *Graphene in Greece*
 ‘VIMA’ Greek national newspaper, 05 December 2010.

4H. Participation in conferences and scientific meetings

1. 12th Panhellenic Conference on Solid State Physics, Heraklion-Crete (Greece) September 1996 (**poster presentation, best poster award**).
2. 3rd International Workshop in Russia: “Fullerenes and Atomic Clusters”, St. Petersburg (Russia) June 1997 (**poster presentation**).

3. International Conference on High Pressure Science and Technology (Joint Conference: AIRAPT-16 & HPCJ-38), Kyoto (Japan) August 1997 (**oral** presentation).
4. 13th Panhellenic Conference on Solid State Physics, Perea-Thessaloniki (Greece) September 1997 (**oral** and **poster** presentation).
5. 8th International Conference on High Pressure Semiconductor Physics, Thessaloniki (Greece) August 1998 (**poster** presentation).
6. 36th EHPRG Meeting on: Low Dimensional Systems under Pressure, Catania (Italy) September 1998 (**poster** presentation).
7. 14th Panhellenic Conference on Solid State Physics, Ioannina (Greece) September 1998 (**oral** and **poster** presentation).
8. Summer School: “Advanced Materials for Industrial Applications”, Kavala (Greece) June 1999 (**poster** presentation).
9. International Conference on Solid State Spectroscopy, Schwabisch Gmund (Germany) September 1999 (**poster** presentation).
10. 37th EHPRG Meeting of the European High Pressure Research Group, Montpellier (France) September 1999 (**oral** and **poster** presentation).
11. 15th Panhellenic Conference on Solid State Physics, Patra (Greece) September 1999 (**poster** presentation).
12. 16th Panhellenic Conference on Solid State Physics, Nafplio (Greece) September 2000 (**poster** presentation).
13. 9th International Conference on High Pressure Semiconductor Physics, Sapporo (Japan) September 2000 (**poster** presentation).
14. 17th Panhellenic Conference on Solid State Physics, Xanthi (Greece) September 2001 (**oral** presentation).
15. Muon Spin Rotation/Relaxation/Resonance Users Meeting, Villigen (Switzerland) Ιανουάριος 2002 (**oral** presentation).
16. 9th International Conference on Muon Spin Rotation/Relaxation/Resonance, Williamsbourg, Virginia (USA) June 2002 (**poster** presentation).
17. 201th Electrochemical Society Meeting, Philadelphia (USA), May 2002 (**poster** presentation).
18. 10th International Conference on High Pressure Semiconductor Physics, Guildford (UK) August 2002 (**oral** presentation).
19. FULLPROP meeting 2002, Delphi (Greece) December 2002 (**oral** presentation).
20. Dynamic inhomogeneities in complex oxides, Bled (Slovenia) June 2003 (**oral** presentation).
21. NanoteC03: Nanotechnology in Carbon and Related Materials, Brighton (UK) August 2003 (**oral** presentation).
22. 19th Panhellenic Conference on Solid State Physics, Thessaloniki (Greece) September 2003 (**oral** and **poster** presentation).
23. XVI National Symposium on Condensed Matter Physics, Sokobanja (Serbia) September 2004 (**oral** presentation).

24. 205th Electrochemical Society Meeting, Hawai (USA), October 2004 (**poster** presentation).
25. Materials Science Symposium (organized by the Materials Science Department of University of Patras), Patras (Greece) July 2004 (**poster** presentation).
26. Dalton Discussion 7, University of St. Andrews (UK) July 2004 (**oral** presentation).
27. 11th International Conference on High Pressure Semiconductor Physics, Berkeley, CA (USA) August 2004 (**poster** and **oral** presentation).
28. 16th Serbia and Montenegro National Symposium on Condensed Matter Physics, Sokobanja (Serbia and Montenegro) September 2004 (**oral** presentation).
29. 20^o Panhellenic Conference on Solid State Physics, Ioannina September 2004 (**oral** and **2 poster** presentation).
30. Nanotech Insight 2005, The International Conference on Nanotechnology: Science and Application, Luxor (Egypt) February 2005 (**oral** presentation).
31. 207th Electrochemical Society Meeting, Quebec (Canada) May 2005 (**poster** presentation).
32. 43th EHPRG Meeting of the European High Pressure Research Group, Karlsruhe (Germany) July 2005 (**2 poster** presentations).
33. 21^o Panhellenic Conference on Solid State Physics and Materials Science, Nicosia (Cyprus) August 2005 (**oral** and **2 poster** presentations).
34. Diamond 2005, 16th European Conference on Diamond, Diamond-like Materials, Carbon Nanotubes and Nitrides, Toulouse (France) September 2005 (**poster** presentation).
35. Materials Science Department Research Meeting: “Materials Science and Industry”, Patras, May 2006 (**poster** presentation).
36. 28th International Conference on the Physics of Semiconductors, Vienna (Austria) July 2006 (**poster** presentation).
37. 12th International Conference on High Pressure Semiconductor Physics, Barcelona (Spain) August 2006 (**oral** and **poster** presentation).
38. 22^o Panhellenic Conference on Solid State Physics and Materials Science, Patras, September 2006 (**4 poster** presentations).
39. 44th EHPRG Meeting of the European High Pressure Research Group, Prague (Czech) September 2006 (**poster** presentation).
40. European Congress and Exhibition on Advanced Materials and Processes (EUROMAT), Nürnberg (Germany) September 2007 (**oral** presentation).
41. XXI International Winterschool on Electronic Properties of Novel Materials: Molecular Nanostructures, Kirchberg/Tirol (Austria) March 2007 (**2 poster** presentations). *Τα αποτελέσματα του συνεδρίου παρουσιάστηκαν στα News and Views του περιοδικού Nature Materials (Tomas Pichler, Molecular Nanostructures: Carbon ahead, Nature Materials 5, 332-333 (2007)).*
42. 8th International Conference on Ultimate Integration on Silicon (ULIS), Leuven (Belgium) March 2007 (**poster** presentation).

43. 3rd International symposium on Nanostructured and Functional Polymer-Based Materials and Nanocomposites, Corfu (Greece) May 2007 (**3 posters** presentation).
44. 13th European Conference on Composite Materials (ECCM13), Stockholm (Sweden) June 2008 (**oral** presentation).
45. 8th International Conference on Ultimate Integration on Silicon (ULIS), Leuven (Belgium) March 2007 (**poster** presentation).
46. 14th International Conference on Solid-State sensors actuators and microsystems (TRANSDUCERS'07 and Eurosensors XXI) Lyon (France) June 2007 (**poster** presentation).
47. 23^o Panhellenic Conference on Solid State Physics and Materials Science, Athens, September 2007 (**3 poster** presentations).
48. 1st International Symposium on Flexible Organic Electronics (IS-FOE), Halkidiki (Greece) July 2008 (**poster** presentations).
49. 5th International Conference on "Nanosciences & Nanotechnologies" (NN08), Thessaloniki (Greece) July 2008 (**poster** presentation).
50. 7^o Panhellenic Conference on Polymers, Ioannina, October 2008 (**2 poster** presentations).
51. 4th International Intensive course and workshop: nanomedicines – Nanoparticulates for drug delivery, Patras (Greece) July 2008 (**poster** presentation).
52. International meeting on the chemistry of nanotubes: science and applications (Chemon Tubes 2008), Zaragoza (Spain) April 2008 (**poster** presentation).
53. Summer school green and sustainable chemistry, Patras, July 2008 (invited **oral** presentation).
54. 4th International conference Nanofun-poly, Rome (Italy) April 2008 (**poster** presentation).
55. XXIII International Winterschool on Electronic Properties of Novel Materials: Molecular Nanostructures, Kirchberg/Tirol (Austria) March 2009 (**poster** presentation).
56. 5th International conference on Nanostructured polymers and nanocomposites, Paris (France) April 2009 (poster) (**oral and poster** presentation)
57. 17th International conference on composite materials (ICCM-17), Edinburgh (UK) July 2009 (**oral and poster** presentation).
58. NanoLab Workshop, Drvengrad (Serbia) June 2009 (**oral** presentation).
59. 2nd International conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems Rhodes, Greece June 28-July 03 2009 (invited **oral**).
60. 2nd International Symposium on Flexible Organic Electronics (IS-FOE09), Halkidiki (Greece) July 2009 (**poster** presentations).
61. 36th Annual meeting and exposition of the controlled release society, Copenhagen (Denmark) July 2009 (**poster** presentations).
62. 25^o Panhellenic Conference on Solid State Physics and Materials Science, Thessaloniki, September 2009 (**2 poster** presentations).

63. 7th General Conference of the Balkan Physical Union, Alexandroupolis (Greece), September 2009 (**poster** presentation).
64. International conference on carbon nanostructured materials (Cnano'09), Santorini (Greece) October 2009 (**oral** and **3 poster** presentations).
65. 9th Forth Retreat, Loutra Kyllinis (Peloponnesus) October 2009 (**oral** presentation).
66. CECAM/Psi-k workshop on Computational Physics and Chemistry of Graphene, Lausanne (Switzerland) October 2009 (**poster** presentation).
67. Deutsche Physikalische Gesellschaft (German Physical Society), Regensburg (Germany) March 2010 (**poster** presentation).
68. XXIV International Winterschool on Electronic Properties of Novel Materials, Kirchberg/Tirol (Austria) March 2009 (**oral** and **poster** presentation).
69. 6th International conference on Nanostructured polymers and nanocomposites, Madrid (Spain) April 2010 (**oral** presentation)
70. Graphene Week, College Park, Maryland (USA) April 2010 (**poster** presentation).
71. Annual World Conference on Carbon by the American Carbon Society, Clemson, South Carolina (USA) July 2010 (**oral** presentation).
72. 48th European High Pressure Research Group (EHPRG) Conference, Uppsala (Sweden) July 2010 (**poster** and **oral** presentation).
73. 2nd Greek-Turkish Conference on Statistical Mechanics & Dynamical Systems, Turunc/Marmaris – Symi/Rhodos September 2010 (**oral** presentation).
74. 26^o Panhellenic Conference on Solid State Physics and Materials Science, Ioannina, September 2010 (**poster** presentation, **best poster award**).
75. Fullerene Silver Anniversary Symposium (FSAS 2010), Hersonissos, Crete (Greece) October 2010 (**oral** presentation).
76. Research Meeting of the Biomedical and Biotechnological Applications Research Network (Biotargeting), November 2010 (**poster** presentation).
77. 8th Hellenic Polymer Society Symposium, Hersonissos (Greece) October 2010 (**poster** presentation).
78. 4th International Conference on Micro-Nanoelectronics, Nanotechnologies & MEMs NCSR, Demokritos, Athens (Greece) December 2010 (**2 poster** presentations, **best poster award**).
79. Research Meeting of the Nano-Materials and Devices (NANO- DEMA) Research Network, February 2011 (invited **oral**).
80. XXV International Winterschool on Electronic Properties of Novel Materials: Molecular Nanostructures, Kirchberg/Tirol (Austria) March 2011 (**3 posters** presentation).
81. Graphene 2011, Bilbao (Spain), April 2011 (**2 posters** presentation).
82. A Multidisciplinary and Intersectorial European Workshop on Synthesis, Characterization and Technological Exploitation of Graphene (GraphITA), Assergi – L'Aquila (Italy), May 2011 (Invited **oral**).

83. NT11 International conference on the science and application of nanotubes, University of Cambridge/Cambridge (UK), July 2011 (2 **posters** presentation).
84. 27th Panhellenic Conference on Solid State Physics and Materials Science, Ioannina, September 2011 (**oral** and 2 **posters** presentation).
85. ICAST2011 22nd International Conference on Adaptive Structures and Technologies, Corfu (Greece), October 2011 (**oral** presentation).
86. 3rd Internatinal conference NANOCON 2011, Brno (Czech Republic), September 2011 (**poster** presentation).
87. ICAST2011 22nd International Conference on Adaptive Structures abd Technologies, Corfu (Greece), October 2011 (**oral** presentation).
88. Workshop at the Institute of Materials for Electronics and Magnetism (IMEM), Parma (Italy), October 2011 (**oral** presentation).
89. 14th Panhellenic Conference in Physics, Kamena Vourla, 29 March – 01 April 2012 (**invited oral** presentation).
90. 15th European Conference on Composite Materials (ECCM15), Venice (Italy), June 2012 (2 **oral** presentations).
91. 9th International Conference on Nanosciences & Nanotechnologies (NN12), Thessaloniki (Greece), July 2012 (**invited oral**).
92. 28th Panhellenic Conference on Solid-State Physics and Materials Science, Patras, September 2012 (**invited oral**).
93. A European Conference/Workshop on the Synthesis, Characterization and Aplications of Graphene (GrapHEL), Mykonos (Greece), September 2012 (**oral** and 5 **poster** presentation).
94. 50th European High Pressure Research Group Meeting, Thessaloniki (Greece) September 2012 (**oral** and **poster** presentation).
95. 9th Hellenic Polymer Society Conference, Thessaloniki (Greece) November 2012 (2 **oral** presentations).
96. Materials Today Virtual Conference, 11-13 December 2012 (**poster** presentation).
97. 27th International Winterschool on Electronic Properties of Novel Materials (IWEPNM), Kirchberg/Tirol (Austria) March 2013 (2 **poster** presentations).
98. Graphene 2013, Bilbao (Spain), Aprill 2013 (**poster** presentation).
99. Graphene Commercialisation & Applications 2013, London (UK), June 2013 (**poster** presentation).
100. 10th International Conference on Nanosciences & Nanotechnologies (NN12), Thessaloniki (Greece), July 2013 (**invited oral**).
101. 4th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems, Kerkyra (Greece), 16-20 July 2013 (**oral**).
102. Foundation for Research and Technology-Hellas (FORTH), Hrakleion Crete, July 2013 (5 **posters** presentation).
103. The 2013 Lectures in Physics and Chemistry: Nanoscience and Nanotechnology of Onassis Foundation Sience Lectures Series, Heraklion (Greece), July 2013.

104. 51th European High Pressure Research Group International Meeting, Queen Mary University of London (UK), September 2013 (**invited oral** presentation).
105. 29th Panhellenic Conference on Solid-State Physics and Materials Science, Athens, September 2013 (**2 oral and 2 posters** presentation).
106. Graphene Flagship Kick off Meeting (WP Nanocomposites), ISOF Institute, Bologna (Italy), October 2013 (**oral** presentation).
107. CCQCN Meeting at National Hellenic Research Foundation, Athens (Greece), 1st November 2013 (**oral** presentation).
108. Graphene Flagship Meeting (WP Nanocomposites), University of Strasbourg, Strasbourg (France), 9-10 April 2013 (**oral** presentation).
109. Meeting of the INSOLCELL bilateral Greek-Germany project, Patras (Greece), 10th January 2014 (**oral** presentation).
110. Internal meeting at BIC Viorex, Athens (Greece), 14th February 2014 (**oral** presentation).
111. A European Conference/Workshop on the Synthesis, Characterization and Applications of Graphene (GRAPHESP), Lanzarote (Spain), February 2014 (**2 oral and 2 posters** presentation).
112. 11th International Conference on Nanosciences & Nanotechnologies (NN14), Thessaloniki (Greece), July 2014 (**invited oral and 1 poster**).
113. Graphene Week 2014, Gothenburg (Sweden), June 2014 (**oral and poster** presentation).
114. Graphene 2014, Toulouse (France), May 2014 (**oral** presentation).
115. 16th European Conference on Composite Materials (ECCM16), Seville (Spain), June 2014 (invited **oral and poster** presentations).
116. 20th International Conference on conversion and Storage of Solar Energy (IPS-20), Berlin (Germany), July 2014 (**poster** presentation).
117. E-MRS 2014 Fall Meeting (Symposium D), Warsaw University of Technology, Warsaw (Poland), September 2014 (**poster** presentation).
118. XVI International Symposium on Luminescence Spectroscopy (ISLS 2014) Fundamentals and Applications, Rhodos Palace. Rhodos (Greece), September 2014 (**poster** presentation).
119. 52nd EHPRG Meeting of European High Pressure Research Group, Lyon (France), September 2014 (poster presentation).
120. 30th Panhellenic Conference on Solid-State Physics and Materials Science, Heraklion (Greece), September 2014 (**invited oral, oral and 4 poster** presentations).
121. Graphene Flagship Meeting (WP Nanocomposites), Max Planck Institute For Polymer Research, Mainz (Germany), 9-10 October 2014 (**oral** presentation).
122. 10th Hellenic Polymer Society Conference, 4 December 2014 (**oral and poster** presentation).
123. ImageNano 2015, Bilbao (Spain), March 2015 (**poster** presentation).
124. Graphene Week 2015, Manchester (UK), June 2015 (**5 poster** presentation).

125. 10th Panhellenic Scientific Conference in Chemical Engineering, Patra (Greece), June 2015 (**2 oral** and **4 poster** presentations).
126. Graphene Flagship Meeting (WP10 Nanocomposites), Institute of Organic Synthesis and Photoreactivity (ISOF) of the National Research Council of Italy (CNR), Bologna (Italy), 23-24 April 2015 (**oral** presentation).
127. 12th International Conference on Nanosciences & Nanotechnologies (NN15), Thessaloniki (Greece), July 2015 (**2 oral and poster** presentations).
128. 6th International conference on Advanced Nanomaterials, 1st International conference on Graphene Technology, 1st International conference on Hydrogen Energy (ANM2015), Aveiro (Portugal), July 2015 (**2 poster** presentations).
129. 20th International Conference on Composite Materials (ICCM20), Copenhagen (Denmark), July 2015 (**oral and poster**).
130. A Multidisciplinary and Intersectorial Workshop on Synthesis, Characterization and Technological Exploitation of Graphene (GraphITA 2015), Università degli Studi de L'Aquila, L'Aquila (Italy), September 2015 (**oral and poster** presentations).
131. 31th Panhellenic Conference on Solid-State Physics and Materials Science, Thessaloniki (Greece), 20-23 September 2015 (**oral and poster** presentations).
132. Meeting in frame of research programme «*Aristeia II: Graphene Physics in the time domain and application to 3D optical memories*», Patras (Greece), 26 October 2015 (**oral** presentation).
133. Graphene Flagship Meeting (WP10 Nanocomposites Composites), University of Manchester, Manchester (UK), November 2015 (**oral** presentation).
134. Graphene 2016, Genoa (Italy), April 2016 (**oral** and **2 poster** presentation).
135. 17th European Conference on Composite Materials (ECCM17), Munich (Germany), June 2016 (**invited oral and oral**).
136. 5th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N-2016), Porto Heli (Greece), June 2016 (**invited oral**).
137. Graphene Flagship Meeting (WP14 Polymer Composites), Chalmers University, Gothenburg (Sweden), 5-6 April 2016 (**oral** presentation).
138. 7th Panhellenic Symposium on Porous Materials, University of Ioannina, Ioannina (Greece), 2-4 June 2016 (**oral** presentation).
139. Graphene Week 2016, Warsaw (Poland), 13-17 June 2016 (**oral** and **poster** presentation).
140. 5th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N-2016), Porto Heli (Greece), June 2016 (**invited oral, oral** and **poster** presentation).
141. 17th European Conference on Composite Materials (ECCM17), Munich (Germany), 26-30 June 2016 (**2 oral** presentation).
142. 26th Condensed Matter Division (CMD 26) of the European Physical Society, Session: Theory and Simulation of 2D materials, Groningen (The Netherlands), 4-9 September 2016 (**Invited oral** presentation).

143. 2nd Workshop of graduates and postdocs in Chemical Engineering Sciences, FORTH/ICEHT of Patras (Greece), 21 September 2016 (2 **oral** and 2 **poster** presentations).
144. 32th Panhellenic Conference on Solid-State Physics and Materials Science, Ioannina (Greece), 18-21 September 2016 (1 **oral** and 2 **poster** presentations).
145. Training workshop ('*Raman Revealed 2016*') of Renishaw plc, Wotton-under-Edge (UK), 18-21 October 2016.
146. 11th Hellenic Polymer Society Conference, Foundation for Research and Technology-Hellas, Heraklion, Crete (Greece), 3-5 November 2016 (**oral** presentation).
147. 2nd Greek Meeting on Two-dimensional Materials, Foundation for Research and Technology-Hellas, Heraklion, Crete (Greece), 1-2 November 2016 (**oral** presentation).
148. Materials Research Meeting (MRS), Symposium: Functiona Plasmonics, Boston Massachusetts (USA), 27 November-2 December 2016 (**oral** presentation).
149. 2nd Training Workshop on Advanced Material Characterisation Techniques, Athens (Greece), 25-26 November 2016 (invited oral).
150. The Advanced Institute for Materials Research (AIMR) International Symposium 2017 (AMIS2017), Sendai (Japan), 12-17 February 2017 (poster presentation).

4I. Invited speeches and seminars

1. *Structural, electronic and vibrational properties of C₆₀-based fullerenes*
European Synchrotron Radiation Facility (ESRF), Grenoble, France (2005).
2. *Properties, characterization and applications of carbon nanotubes*
Summer school of green and sustainable chemistry, Patras July 2008.
3. *Surface Functionalization of Carbon Nanotubes*
2nd International conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems, Rhodes, Greece June 28-July 03 2009.
4. *Electronic and vibrational properties of graphene under strain*
XXIV International Winterschool on Electronic Properties of Novel Materials, Kirchberg/Tirol (Austria) March 2010.
5. *Raman spectroscopy applied to materials science*
Master course (10 hours), Department of Materials Science and Metallurgical Engineering, Technical University of Catalonia (UPC), Barcelona, Spain, April 2010.
6. *Carbon nanotube polymer-hybrid materials*
Department of Materials Science and Metallurgical Engineering, Technical University of Catalonia (UPC), Barcelona, Spain, April 2010.
7. *Probing the deformation behaviour of a graphene flake by means of Raman spectroscopy*
Center for Research of Nanoengineering, Technical University of Catalonia (UPC), Barcelona, Spain, April 2010.
8. *Vibrational properties of rare earth garnet solid solutions (Gd_{1-x}Y_x)₃Ga₅O₁₂*
School of Mathematics, Physics and Computational Sciences, Faculty of Engineering, Aristotle university of Thessaloniki, July 2010.
9. *Probing the optical phonons of graphene by mechanical loading*

- 2nd Greek-Turkish Conference on Statistical Mechanics & Dynamical Systems, Turunc/Marmaris – Symi/Rhodos, September 2010.
10. *Raman spectroscopy: a probe for the physical and mechanical properties of graphene*
Theoretical & Physical Chemistry Institute, National Hellenic Research Foundation, December 2010.
 11. *Raman spectroscopy: a tool for the investigation of carbon based materials*
Meeting of the Research network «Nano-Materials and Devices», February 2011.
 12. *Single- and Multi-Layer Graphenes in Tension and Compression*
A Multidisciplinary and Intersectorial European Workshop on Synthesis, Characterization and Technological Exploitation of Graphene (GraphITA), Assergi – L’Aquila (Italy), May 2011.
 13. *Physics and mechanics of single- and multi-layer graphenes*
Department of Physics, University of Crete, May 2011.
 14. *Mechanical properties of graphene in tension and compression*
3rd International conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems, Crete, Greece, June 26-29 2011.
 15. *Graphene: Synthesis, properties and applications*
Board of European Students of Technology (BEST) Summer Course “Re-create engineering: think out of the box!”, Patras, Greece, July 2011.
 16. *Light and matter in double resonance: the case of graphene nanostructures*
14th Panhellenic Conference in Physics, Kamena Vourla, 29 March – 01 April 2012.
 17. *Structural deformation of single and bilayer graphene*
28th Panhellenic Conference on Solid-State Physics and Materials Science, Patras, September 2012.
 18. *The effect of strain on single and bilayer graphene*
9th International Conference on Nanosciences & Nanotechnologies (NN12), Thessaloniki (Greece), July 2012.
 19. *Graphene physics and mechanics*
Foundation of Research and Technology-Hellas (FORTH), Institute of Chemical Engineering Sciences (ICE-HT), 28 November 2012.
 20. *Graphene under the influence of uniaxial and hydrostatic stress*
Meeting of the University network ΘΕΩΣΥ/NANOTHEO in ‘Theoretical and Computational Nano-Physics & Chemistry’, 31 May 2013.
 21. *Νανοϋλικά με βάση τον άνθρακα: ιδιότητες και εφαρμογές*
Three hours lecture in the frame of the course ‘Materials Science’, Department of Physics, University of Patras, May 2013.
 22. *Substrate and pressure transmitting media effects on graphene studied by Raman spectroscopy*
51th European High Pressure Research Group International Meeting, Queen Mary University of London (UK), September 2013.
 23. *Compression instability of graphene sheets embedded in polymer matrix*
A European Conference/Workshop on the Synthesis, Characterization and Applications of Graphene (GRAPHESP), Lanzarote (Spain), February 2014.
 24. *Fabrication and properties of polymer nanocomposites based on carbon nanotubes prepreps*

- 16th European Conference on Composite Materials (ECCM16), Seville (Spain), June 2014.
25. *Optical spectroscopy: a versatile experimental technique for the investigation of graphene-based materials*
Department of Physics, University of Patras, Patras, June 2014.
 26. *Few layer graphene flakes under efficient mechanical loading: experiment and modelling*
Graphene Week 2014, Gothenburg (Sweden), June 2014.
 27. *Single and few layer graphene flakes under uniaxial deformation*
30th Panhellenic Conference on Solid-State Physics and Materials Science, Heraklion (Crete), September 2014.
 28. *Few layer graphene flakes under efficient mechanical loading: experiment and modelling*
11th International Conference on Nanosciences & Nanotechnologies (NN14), Thessaloniki (Greece), July 2014.
 29. *Recent developments in optical spectroscopy of graphene*
Summer School '10 years from the discovery of graphene', Guest of Honour Kostya Novoselov (Nobel Prize in Physics (2010)), Patras (Greece), July 2014.
 30. *Optical spectroscopy of graphene*
Department of Physics, University of Patras, Patras, March 2015.
 31. *Compression behaviour of embedded graphenes of various thicknesses*
17th European Conference on Composite Materials (ECCM17), Munich (Germany), June 2016.
 32. *Thicker 2D Materials: the case of trilayer graphene*
5th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N-2016), Porto Heli (Greece), June 2016.
 33. *Examining the response of graphene and othr 2D crystals under mechanical loads*
Condensed Matter Division (CMD 26) of the European Physical Society, Session: Theory and Simulation of 2D materials, Groningen (Netherland), 4-9 September 2016.
 34. *Vibrational and optical properties of carbon based nanomaterials*
2nd Training Workshop on Advanced Material Characterisation Techniques, Athens (Greece), 25-26 November 2016.

4J. Summary of scientific work

Publications:	PhD Thesis
	100 papers in international scientific refereed journals.
	1 Review article (Progress in Polymer Science).
	1 book (in preparation).
	4 chapters in books (Wiley, RSC, Springer).
	1 newspaper article
	14 publications in special issues and conference proceeding

(refereed).

4 publications in special issues and conference proceeding (non-refereed).

55 publications in the proceedings of the Panhellenic Conference on Solid State Physics and Materials Science (non-refereed).

Conferences:

149 international and national scientific conferences { 150 poster, 98 oral from which 34 invited oral }

Citations:

Over 4500