

i. Curriculum Vitae: Panagiotis A. Loukakos

Personal details:

Name: Dr. Panagiotis A. Loukakos
Place of birth: Chania, Greece, 1972
Nationality: Greek
Marital status: Single
Gender: Male
Current position: Assistant Researcher, FORTH-IESL
Work address: Foundation for Research and Technology – Hellas (FORTH), Institute of Electronic Structure and Laser (IESL), N. Plastira 100, Vassilika Vouton, P.O. Box 1385, 71110 Heraklion, Greece.



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Language skills: Greek (fluent), English (conversational), German (survivor)

Job experience:

April 2011- Assistant researcher, FORTH-IESL
October 2008-March 2011 Junior Researcher, FORTH-IESL
April 2007 – Sept. 2008: Postdoctoral research, FORTH-IESL.
Oct. 2002 – Jan. 2007: Postdoctoral research, Freie Universität Berlin, AG. Prof. Dr. M. Wolf.
May 2002 – Sept. 2002: Postdoctoral research FORTH-IESL.

Teaching experience:

Autumn 2003-2006: Teaching assistance, Experimental Physics III (course), and Student physics laboratories, Physics dept., Freie Universität Berlin.
Aut. 1992 – Aut. 2002: Teaching assistance in 2nd- 3rd- and 4th-year student physics laboratories, Physics dept., University of Crete.

Education:

Oct. 1998 – Apr. 2002: Ph.D thesis, “The influence of structure on ultrafast electron dynamics in non-stoichiometric III-V semiconductors and metallic nano-composites” Physics dept., University of Crete, and FORTH-IESL. Thesis supervisor Prof. C. Fotakis.
Oct. 1996 - Sept. 1998: Postgraduate studies (M.Sc.) in General Physics, Physics dept., University of Crete.
Oct. 1995 - Sept. 1996: Research trainee, FORTH-IESL.
Oct. 1990 - Sept. 1996: Undergraduate studies (B.Sc.), Physics dept., University of Crete.

Research career summary:

I obtained my B.Sc. degree, M.Sc. degree and Ph.D in Physics from the Physics Department of the University of Crete (1996, 1998 and 2002). My Ph.D thesis (supervised by Prof. C. Fotakis-director of IESL and chair of the BoD, FORTH) dealt with the investigation of ultrafast electron and lattice dynamics in semiconductors, metals and their nanostructures following excitation by ultrashort laser pulses. A part of my Ph.D thesis work was carried out in the laboratories of the Laboratory of Applied Optics in the Ecole Polytechnique in Paris, France under the supervision of Dr. Fabrice Vallee. This part dealt with the ultrafast opto-electronic properties of metallic nanoparticles. From 2002 till 2007 I was a postdoctoral fellow at the research group of Prof. Dr. Martin Wolf in the Free University of Berlin. There my colleagues and I dealt with measurements on surfaces and interfaces utilizing ultrafast, time-resolved photoemission spectroscopy.

We studied the ultrafast dynamics of electronic and lattice interactions and the energy transfer and exchanges that occur in metallic surfaces and interfaces following ultrashort laser pulse excitation. Since 2007 I am back in Greece and since 2008 I am elected researcher in FORTH-IESL. My general research direction is "Studies of ultrafast dynamics in condensed matter". My colleagues and I have set up a new laboratory in IESL (operating since March 2009) to perform time-resolved measurements using ultrashort laser pulses and study the physics of novel condensed-phase materials.

Research directions:

- Ultrafast dynamics in condensed-phase materials with novel optoelectronic properties.
These experiments are performed using amplified laser pulses with 1 kHz repetition rate, center wavelength 800 nm and 1 mJ energy per pulse. Nonlinear optical techniques are employed to generate a wide spectrum of frequencies needed to excite specific resonances imposed by the system under study. Time-resolved measurements are performed by utilization of the pump-and-probe methodology. Of interest are the ultrafast processes and physics of semiconductors metals and dielectrics in confined geometries, complex materials exhibiting strong electronic correlations and nanostructures that exhibit novel combined optoelectronic and magnetic properties, hybrid and nanostructured materials with applications in environmental-friendly photonic devices.
- Excitation and control of ultrafast coherent and incoherent processes in condensed matter.
Following study and understanding of the fundamental physical properties of condensed phase matter we are investigating the possibilities to achieve control in the coherent as well as incoherent processes that occur in solids following excitation. Coherent excitations like the oscillating lattice response due to the excitation of acoustic and optic phonon modes and incoherent response like the electron-lattice energy transfer following ultrashort pulse laser excitation are 2 examples of processes that are considered in this direction. The basic tool for this study is the application of spatio-temporal shaping of the laser pulses.
- Study and tailoring of ultrafast laser-induced structural transitions in solids via spatio-temporal shaping.
At high intensities the irradiated material undergoes structural transitions in the form of processing, melting, evaporation, and generally ablation. The understanding of the evolution of the material from the moment of excitation until the final state is very challenging due to the high number and the complexity of the physical and chemical processes that occur (laser-matter energy transfer, phase transition/explosion, material re-solidification etc.). It is important for a number of applications to obtain a degree of control of the damage that is caused on the irradiated surface by the ultrashort laser pulses. This "damage control" is investigated by the use of spatio-temporally shaped ultrashort laser pulses. The goal is to study to which extent one is able to control macroscopic properties of the finally processed material (optical, morphological, chemical properties etc.) by controlling the primary physical properties (ultrafast electronic and lattice interactions) that occur in the fs and ps time scales.

Reviewer in: journals published by the American Physical Society, Springer and Elsevier.

Bibliometric data:

38 publications in peer-reviewed international scientific journals

800+ citations

h-index: 14

Theses supervision:

- Diploma thesis, E. Magoulakis, "Ultrafast dynamics on ZnO/Si micro-cones", University of Crete, 2009.
- Masters thesis, E. Magoulakis, University of Crete, in progress.
- PhD thesis, M. Barberoglou, "Femtosecond laser micro/nano structuring of solid surfaces: Fundamentals and applications", University of Crete, awarded in 2012.
- Diploma thesis, N. Stathopoulos, University of Crete, in progress
- Masters thesis, G. Arvanitakis, University of Crete, in progress.

ii. List of publications

1. G. D. Tsibidis, E. Stratakis, P. A. Loukakos, and C. Fotakis, “Controlled ultrashort pulse laser induced ripple formation on semiconductors” **invited article** Appl. Phys. A **114**, 57 (2014).
2. M. Barberoglou, G. D. Tsibidis, D. Gray, E. Magoulakis, C. Fotakis, E. Stratakis, and P. A. Loukakos, “The influence of ultra-fast temporal energy regulation on the morphology of Si surfaces through femtosecond double pulse irradiation”, Appl. Phys. A **113**, 273 (2013).
3. M. Barberoglou, D. Gray, E. Magoulakis, C. Fotakis, P. A. Loukakos, and E. Stratakis, “Controlling ripples’ periodicity using temporally delayed femtosecond laser double pulses”, Opt. Express **21**, 18501 (2013).
4. E. Magoulakis, A. Kostopoulou, G. N. Arvanitakis, A. G. Kanaras, A. N. Andriotis, A. Lappas, and P. A. Loukakos, “Porosity-moderated ultrafast electron transport in Au nanowire networks”, Appl. Phys. A **111**, 711 (2013).
5. E. Stratakis, E. V. Barmina, P. A. Loukakos, G. A. Shaffev, and C. Fotakis, chapter “Ultrafast Laser-Assisted Surface Micro- and Nanostructuring” In “Ultrafast Laser Processing: From Micro- to Nanoscale” Edt by K. Sugioka and Y. Cheng, Panstanford Publishing Pte. Ltd. 2013, ISBN 978-981-4267-33-5. DOI: 10.4032/9789814303699.
6. G. D. Tsibidis, M. Barberoglou, P. A. Loukakos, E. Stratakis, and C. Fotakis, “Dynamics of ripple formation on silicon surfaces by ultrashort laser pulses in subablation conditions”, Phys. Rev. B **86**, 115316 (2012).
7. A. Foehlich, S. Vijayalakshmi, A. Pietzsch, M. Nagasono, W. Wurth, P. S. Kirchmann, P. A. Loukakos, U. Bovensiepen, M. Wolf, M. Tchapyguine, F. Hennies, “Charge transfer dynamics in molecular solids and adsorbates driven by local and non-local excitations”, Surf. Sci. **606**, 881 (2012).
8. A. A. Serafetinides, M. Makropoulou, E. Spyratou, C. Bacharis, M. Barberoglou, A. Englezis, C. Kalpouzos, P. Loukakos, P. Pouli, “Femtosecond And Picosecond Laser Ablation Of Intraocular Lenses: An Advanced Technique For Their Surface Modification”, AIP Conf. Proc. **1380** 12-17 (2011).
9. J. M. Manceau, P. A. Loukakos and S. Tzortzakis, “Direct acoustic phonon excitation by intense and ultrashort THz pulses”, Appl. Phys. Lett. **97**, 251904 (2010).
10. E. L. Papadopoulou, E. Axente, E. Magoulakis, C. Fotakis, and P. A. Loukakos, “Laser induced forward transfer of metal oxides using femtosecond double pulses”, Appl. Surf. Sci. **257**, 508 (2010).
11. E. Magoulakis, E. L. Papadopoulou, E. Stratakis, C. Fotakis, and P. A. Loukakos, “Ultrafast electron dynamics in ZnO/Si micro-cones”, Appl. Phys. A **98**, 701 (2010).
12. J. M. Manceau, P. A. Loukakos, and S. Tzortzakis, “Direct phonon excitation in semiconductors by ultrashort intense THz radiation”, Conference proceedings CLEO/QELS (2009), Art. No. 5225658.
13. U. Bovensiepen, S. Declair, M. Lisowski, P. A. Loukakos, A. Hotzel, M. Richter, , A. Knorr, and M. Wolf, “Ultrafast electron dynamics in metals: Real-time analysis of a reflected light field using photoelectrons”, Phys. Rev. B **79**, 045415 (2009).
14. A. Averchi, D. Faccio, E. Rubino, H. Valtna Lukner, P. Panagiotopoulos, P. A. Loukakos, S. Tzortzakis, A. Couairon, and P. Di Trapani, “Linear X-wave generation by means of cross-phase modulation in Kerr media”, Opt. Lett. **33**, 3028 (2008).
15. A. Klini, P. A. Loukakos, D. Gray, A. Manousaki, and C. Fotakis, “Laser Induced Forward Transfer of metals by temporally shaped femtosecond laser pulses”, Opt. Express **16**, 11300 (2008).
16. L. Perfetti, P. A. Loukakos, M. Lisowski, U. Bovensiepen, M. Wolf, H. Berger, S. Biermann and A. Georges, “Femtosecond dynamics of electronic states in the Mott insulator $1T-TaS_2$ by time resolved photoelectron spectroscopy”, New J. Phys. **10**, 053019 (2008).
17. L. Perfetti, P. A. Loukakos, M. Lisowski, U. Bovensiepen, and M. Wolf, “Time resolved photoemission of $Bi_2Sr_2CaCu_2O_{8+\delta}$ ”, Conf. Quant. El. Laser Sci (QELS) 2008, Art. No. 4553095. DOI: 10.1109/QELS.2008.4553095
18. L. Perfetti, P. A. Loukakos, M. Lisowski, U. Bovensiepen, H. Eisaki, and M. Wolf, “Ultrafast Electron Relaxation in Superconducting $Bi_2Sr_2CaCu_2O_{8+\delta}$ by Time-Resolved Photoelectron Spectroscopy”, Phys. Rev. Lett. **99**, 197001 (2007).
19. L. Perfetti, P. Loukakos, M. Lisowski, U. Bovensiepen, and M. Wolf, “Time Resolved Photoemission of an Insulator-Metal Transition”, in Ultrafast Phenomena XV, Proceedings of the 15th International Conference, Pacific Grove/CA, USA, July 30-August 4, 2006; Eds.: P. Corkum, D. Jonas, R. J. D. Miller, A. M. Weiner; Publ.: Springer Berlin-Heidelberg; ISBN: 978-3-540-68779-5, Springer Series in Chemical Physics **88**, 749 (2007)
20. P. S. Kirchmann, P. Loukakos, U. Bovensiepen, M. Wolf, S. Vijayalakshmi, F. Hennies, A. Pietzsch, M. Nagasono, A. Foehlich, and W. Wurth, “Ultrafast Electron Dynamics in $C_6F_6/Cu(111)$ after Localized

- or *Delocalized Excitation*”, in *Ultrafast Phenomena XV*, Proceedings of the 15th International Conference, Pacific Grove/CA, USA, July 30-August 4, 2006; Eds.: P. Corkum, D. Jonas, R. J. D. Miller, A. M. Weiner; Publ.: Springer Berlin-Heidelberg; ISBN: 978-3-540-68779-5, Springer Series in Chemical Physics **88**, 276 (2007).
21. P. A. Loukakos, M. Lisowski, G. Bihlmayer, S. Blügel, M. Wolf, and U. Bovensiepen, “*Dynamics of the self-energy of the Gd(0001) surface probed by femtosecond photoemission spectroscopy*” *Phys. Rev. Lett.* **98**, 097401 (2007).
 22. L. Perfetti, P. A. Loukakos, M. Lisowski, U. Bovensiepen, H. Berger, S. Biermann, P. S. Cornaglia, A. Georges, and M. Wolf, “*Time Evolution of the Electronic Structure of 1T-TaS₂ through the Insulator-Metal Transition*”, *Phys. Rev. Lett.* **97**, 067402 (2006).
 23. M. Lisowski, P. A. Loukakos, A. Melnikov, I. Radu, L. Ungureanu, M. Wolf, and U. Bovensiepen, “*Femtosecond Electron and Spin Dynamics in Gd(0001) Studied by Time-Resolved Photoemission and Magneto-optics*”, *Phys. Rev. Lett.* **95**, 137402 (2005).
 24. U. Bovensiepen, C. Gahl, J. Stähler, P. A. Loukakos, and M. Wolf, “*Femtosecond dynamics of electron transfer, localization and solvation processes at the ice-metal interface*”, *Isr. J. Chem.* **45**, 171 (2005).
 25. P. S. Kirchmann, P. A. Loukakos, U. Bovensiepen, and M. Wolf, “*Ultrafast electron dynamics studied with time-resolved two-photon photoemission: intra- and interband scattering in C₆F₆/Cu(111)*”, *New J. Phys.* **7**, Art. No. 113 (2005).
 26. M. Lisowski, P. A. Loukakos, U. Bovensiepen, and M. Wolf, “*Femtosecond dynamics and transport of optically excited electrons in epitaxial Cu films on Si(111)-7×7*”, *Appl. Phys. A* **79** 739 (2004).
 27. C. Voisin, D. Christophilos, P. A. Loukakos, N. Del Fatti, F. Vallee, J. Lerme, M. Gaudry, E. Cottancin, M. Pellarin, and M. Broyer, “*Ultrafast electron-electron scattering and energy exchanges in noble-metal nanoparticles*”, *Phys. Rev. B* **69**, 195416 (2004).
 28. M. Lisowski, P. A. Loukakos, U. Bovensiepen, J. Stähler, C. Gahl, and M. Wolf, “*Ultrafast dynamics of electron thermalization, cooling and transport effects in Ru (001)*”, *Appl. Phys. A* **78**, 165 (2004).
 29. P. A. Loukakos, C. Kalpouzos, I. E. Perakis, Z. Chatzopoulos, M. Sfendourakis, G. Konstantinidis, and C. Fotakis, “*The role of As precipitates on ultrafast electron trapping in low-temperature-grown GaAs and AlGaAs alloys*”, *J. Appl. Phys.* **91**, 9863 (2002).
 30. P. A. Loukakos, C. Kalpouzos, I. E. Perakis, Z. Hatzopoulos, M. Logaki, C. Fotakis, “*Ultrafast electron trapping times in low-temperature-grown gallium arsenide: The effect of the arsenic precipitate spacing and size*”, *Appl. Phys. Lett.* **79**, 2883 (2001).
 31. N. A. Papadogiannis, P. A. Loukakos and S. D. Moustazis, “*Observation of the Inversion of Second and Third Harmonic Generation Efficiencies on a Gold Surface in the Femtosecond Regime*”, *Opt. Commun.* **166**, 133 (1999).
 32. N. A. Papadogiannis, S. D. Moustazis, P. A. Loukakos and C. Kalpouzos, “*Temporal Characterization of Ultra-Short Laser Pulses Based on Multiple Harmonic Generation on a Gold Surface*”, *Appl. Phys. B* **65**, 339 (1997).
 33. P. A. Norreys, M. Zepf, M. Bakarezos, M. Castro-Colins, D. Chambers, C. N. Danson, A. Dyson, A. P. Fews, P. Gibbon, M. H. Key, P. Lee, P. Loukakos, S. Moustazis, D. Neely, S. G. Preston, F. N. Walsh, J. S. Wark, J. Zhang, and A. E. Dangor, “*Extreme ultraviolet harmonic generation from ultra-intense picosecond laser-solid interactions: Results and perspectives.*”, *Inst. Phys. Conf. Ser. or Multiphoton Processes* **154**, 211 (1997).
 34. P. A. Norreys, M. Bakarezos, L. Barringer, M. Borghesi, F. N. Beg, A. R. Bell, M. Castro-Colins, D. Chambers, A. E. Dangor, C. N. Danson, A. Djaoui, A. P. Fews, R. Galliard, P. Gibbon, L. Gizzi, M. E. Glinsky, B. A. Hammel, M. H. Key, P. Lee, P. Loukakos, A. J. MacKinnon, C. Meyer, J. Meyer-ter-Vehn, S. Moustazis, S. G. Preston, A. Pukhov, S. J. Rose, M. Tatarakis, J. S. Wark, O. Willi, M. Zepf, and J. Zhang, “*Studies of the fast ignition route to internal confinement fusion at the Rutherford Appleton Laboratory*”, *Fus. Eng. Des.* **44**, 239 (1999)
 35. P. A. Norreys, M. Zepf, S. Moustazis, A. P. Fews, J. Zhang, P. Lee, M. Bakarezos, C. N. Danson, A. Dyson, P. Gibbon, P. Loukakos, D. Neely, F. N. Walsh, J. S. Wark, and A. E. Dangor, “*Efficient Extreme UV Harmonics Generated from Picosecond Laser Pulse Interactions with Solid Targets*”, *Phys. Rev. Lett.* **76**, 1832 (1996).
 36. J. Zhang, M. Zepf, P. A. Norreys, A. E. Dangor, M. Bakarezos, C. N. Danson, A. Dyson, A. P. Fews, P. Gibbon, M. H. Key, P. Lee, P. Loukakos, S. Moustazis, D. Neely, F. N. Walsh and J. S. Wark, “*Coherence and bandwidth measurements of harmonics generated from solid surfaces irradiated by intense picosecond laser pulses*”, *Phys. Rev. A* **54**, 1597 (1996).

37. M. H. Key, T. W. Barbee Jr., J. W. Blyth, K. Burnett, G. F. Cairns, A. E. Dangor, T. Dimitre, A. Djaoui, L. B. Da Silva, A. Demir, A. Dyson, A. P. Fews, E. E. Fill, P. Gibbon, P. Lee, S. Healy, M. Holden, M. H. R. Hutchinson, D. H. Kalantar, N. S. Kim, C. L. S. Lewis, Y. Li, J. Lin, P. A. Loukakos, A. G. McPhee, I. Mercer, S. Moustazis, M. Nakai, D. Neely, P. Norreys, A. A. Offenberger, G. J. Pert, S. G. Preston, B. A. Remington, A. Sanpera, D. Schlogl, C. G. Smith, R. Smith, J. Steingruber, G. J. Tallents, F. Walsh, J. S. Wark, J. Warwick, E. Wolfrum, M. Zepf, P. Zeitoun, and J. Zhang, “*Development and application of ultra-bright laser and harmonic XUV sources*”, Inst. Phys. Conf. Ser. **151**, 9 (1996).
38. J. Zhang, M. Zepf, P. A. Norreys, A. E. Dangor, M. Bakarezos, C. N. Danson, A. Dyson, A. P. Fews, P. Gibbon, P. Lee, P. Loukakos, M. H. Key, S. Moustazis, D. Neely, F. N. Walsh, and J. S. Wark, “*Spatial and temporal coherence measurements of harmonics of a 1053 nm, 2.5 ps laser interacting with solid surfaces*”, Inst. Phys. Conf. Ser. **151**, 452 (1996).

Bibliometric data:

38 publications in peer-reviewed international scientific journals, proceedings and book chapters.

800+ (non-self-) citations

h-index: 14

iii. Significant research achievements in the last 10 years

Awards:

- o Marie-Curie individual fellowship 2002-2004 for individual Research in the group of Prof. Dr. M. Wolf, Free University of Berlin. Project entitled "Ultrafast electron and spin dynamics in metallic thin films and confined structures". Contract No. MEIF-CT-2003-501826.

Selected oral and invited contributions in international conferences and workshops:

1. **Invited talk**, "Ultrafast Laser-Induced Processes in Solid State", in Combined Laser Nanotechnology (CLaN) meeting "", October 14th 2013, University of Potenza, Italy.
2. **Oral talk**, "Surface micro/nano-structures by temporally shaped fs laser pulses: Controlled ripple patterning on Si & ZnO", Conference on Laser Ablation (COLA) October 6-11 2013, Ischia, Italy.
3. **Invited talk**, "Ultrafast processes in solids at the nanoscale", 17th International School on Quantum Electronics: Laser Physics and Applications, 24-28 September 2012, Nessebar, Bulgaria.
4. **Invited talk**, "Ultrafast processes in condensed matter", in Combined Laser Nanotechnology (CLaN) kick-off meeting, July 12th, 2012, Potenza, Italy.
5. **Invited talk** "Ultrafast dynamics in nanostructures and nanostructured materials", in the 2nd international workshop on "Nonlinear Nanostructures for Ultrafast Laser Applications", Berlin, May 19-20, 2011.
6. "Ultrafast processes in condensed matter"
Plenary talk in the 4th conference on Modern Trends in Physics Research held in Cairo, Egypt, December 12-16, 2010.
7. "Studies of ultrafast processes in condensed matter with ultrashort laser pulses"
Plenary talk in the 3rd workshop on Ultrafast Lasers Technology and Applications held in Cairo, Egypt, April 16-19, 2010.
8. "Direct phonon excitation with intense, ultrashort THz pulses"
Oral presentation in Conference on Laser Ablation (COLA 09) in Singapore 2009.
9. "Ultrafast lasers and applications: from fundamental processes to material's processing"
Invited talk in the 2nd workshop on Ultrafast Lasers Technology and Applications held in Cairo, Egypt, April 1-3, 2009.
10. "Ultrafast dynamics on the Gd(001) surface studied with time-resolved photoelectron spectroscopy"
Oral presentation in the DPG spring meeting, Dresden 2006.

Events organized:

- o Co-organizer, 3rd workshop on German–Greek Research, Berlin Germany, 13-14 October 2005.

Selected citations of work that I have co-authored:

1. "Ultrafast optical manipulation of magnetic order"
Kirilyuk A, Kimel AV, Rasing T
Reviews of Modern Physics **82**, 2731 (2010)
2. "High-order harmonics from laser-irradiated plasma surfaces"
Teubner U, Gibbon P
Reviews of Modern Physics **81**, 445 (2009)
3. "Colloquium: Optimal control of high-harmonic generation"
Winterfeldt C, Spielmann C, Gerber G
Reviews of Modern Physics **80**, 117 (2008)
4. "Laser technology - Measuring huge magnetic fields"
Tatarakis M, Watts I, Beg FN, et al.
Nature **415**, 280 (2002)
5. "Real-Time Infrared Detection of Cyanide Flip on Silver-Alumina NOx Removal Catalyst"

- Thibault-Starzyk F, Seguin E, Thomas S, et al.
Science **324**, 1048 (2009)
6. "Transient electronic structure and melting of a charge density wave in TbTe₃"
 Schmitt F, Kirchmann PS, Bovensiepen U, et al.
Science **321**, 1649 (2008)
 7. "Quasiparticle lifetimes in metallic quantum-well nanostructures"
 Kirchmann PS, Rettig L, Zubizarreta X, et al.
Nature Physics **6**, 782 (2010)
 8. "Coherent ultrafast magnetism induced by femtosecond laser pulses"
 Bigot JY, Vomir M, Beaurepaire E
Nature Physics **5**, 515 (2009)
 9. "Diffraction-limited performance and focusing of high harmonics from relativistic plasmas"
 Dromey B, Adams D, Horlein R, et al.
Nature Physics **5**, 146 (2009)
 10. "Coherent dynamics of plasma mirrors"
 Author(s): Thaury C, George H, Quere F, et al.
Nature Physics **4**, 631 (2008)
 11. "Plasma mirrors for ultrahigh-intensity optics"
 Thaury C, Quere F, Geindre JP, et al.
Nature Physics **3**, 424 (2007)
 12. "High harmonic generation in the relativistic limit"
 Dromey B, Zepf M, Gopal A, et al.
Nature Physics **2**, 456 (2006)
 13. "Explaining the paradoxical diversity of ultrafast laser-induced demagnetization"
 Koopmans B, Malinowski G, Longa FD, et al.
Nature Materials **9**, 259 (2010)

Other achievements:

1. Since my PhD in 2000 I have introduced in FORTH-IESL an activity for time-resolved measurements in condensed phase materials using femtosecond laser pulses.
2. During my postdoc years in the Freie Universitaet in Berlin Germany in the group of Prof. Martin Wolf I have performed research on the study of ultrafast dynamical process occurring on metallin surfaces and interfaces following excitation by ultrashort laser pulses employing complicated experimental setups that combined ultrafast laser spectroscopy with single and two-photon photoemission spectroscopy. This allowed the research on the energy injection and dissipation dynamics on metallic surfaces useful for femtochemistry applications, the study of magnetization and demagnetization dynamics on metallic surfaces, useful for spintronics and related research and the study of charge injection and transfer in molecular systems useful for physical chemistry and solar materials research. This work covered a broad area of physics and physical chemistry and led to a number of well-cited publications in very respectable and high impact factor international journals, see list of publications.
3. Since my return in FORTH-IESL in 2007 I have been working on the setup of my new laboratory and my own research activity dealing with ultrafast processes in condensed phase materials. In cooperation with internal and external groups specializing on materials research I am building the foundation of a long term promising research activity.
4. Member of the task force of the European Laser Research Infrastructure in the frame of LASERLAB-Europe.
5. Founder of the laboratory for Femtosecond Laser Spectroscopy in Solid State (FLASSS), a laboratory dedicated to study of ultrafast processes in condensed matter using amplified femtosecond laser pulses, a member of the laser laboratory of the FORTH-IESL
6. Development of several homemade secondary laser sources based on nonlinear optical phenomena for delivering intense and ultrashort laser pulses tunable from the near-UV through the Visible to the near IR.

iv. List of other research projects in which I have participated in the last 10 years

Project management

- Marie Curie Intra-European Individual fellowship 2002-2004, Contract No. MEIF-CT-2003-501826. Principal Investigator.
- Herakleitus II, Proposal No. 12/132/05, contributor, currently in effect, Title "Ultrafast dynamics of photo-response in hybrid nano-materials and nano-structures".
- Actively involved in preparation of the local laser facility laboratories within the framework of the LaserLAB Europe Large Scale Installation
- Marie Curie Excellence Grant, contributor, MULTIRAD, MEXT-CT-2006-042683 (2006-2010), Funding ~1.9 MEuro
- EU-FP7-Marie-Curie-PEOPLE-ITN (Initial Training Networks) Proposal co-ordinator, under consideration 2012. Project title "Pulse Shaping in Ultrafast Science" (PUSHUS).