Curriculum Vitae

Personal information

Name	**KAZIANNIS SPYRIDON**
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E-mail	**skaziannis@cc.uoi.gr**
Nationality	Greek
Date of birth	12/07/1977
MILITARY SERVICE	9/02/2011 – 9/11/2011
MOTHER LANGUAGE	Greek
OTHER LANGUAGES	English fluent

Education and training:

• Dates (from – to)	2002-2007
• Name and type of organization providing education and training	Atomic and Molecular Physics Laboratory, Physics Department, University of Ioannina, Ioannina, Greece
• Subject of Thesis	Alignment – ionization and dissociation processes of alkyl halide molecules induced by strong laser fields
• Title of qualification awarded	Ph. D in Physics under supervision of Professor Constantine Kosmidis
• Dates (from – to)	1999-2001
• Name and type of organisation providing education and training	Physics Department, University of Ioannina, Ioannina, Greece
• Postgraduate courses	Quantum Mechanics (two semesters), Electrodynamics (one semester), Mathematical Methods of Physics (two semesters), Atomic and Molecular Physics (two semesters)
• Dates (from – to)	1995-1999
• Name and type of organisation providing education and training	Physics Department, University of Ioannina, Ioannina, Greece
• Title of qualification awarded	B.Sc. in Physics (8.05 on a 1- 10 scale, 2nd best of the particular year)

Seminars – Schools

"Ultrafast processes, methods and applications", The Onassis Foundation Science Lecture Series, The 2001 Lectures in Chemistry and Physics, FORTH, Heraklion – Greece, July 2 – 6, 2001

Grants - Funds

2002 – 2005. Recipient of a 3-year scholarship by the program HERAKLITOS of the Operational Program for Education and Initial Vocational Training of the Hellenic Ministry of Education, under the 3rd Community Support Framework and the European Social Fund

1995 – 1999. Annual scholarships from the Physics Department of the University of Ioannina, Greece.

11/2008. Recipient of funding from LaserLab consortium and Principal researcher of a 5 week experimental run at the LENS institute Florence, Italy in collaboration with members of the Atomic & Molecular Physics Lab of Ioannina University and that of the hosting institution (Dr M. Bellini). The project was related to the formation of molecular H_3^+ fragment ions from polyatomic molecules under strong fs laser irradiation.

PROFESSIONAL EXPERIENCE

Dates (from – to)	31/8/2014- today
• Name and address of employer	Atomic and Molecular Physics Laboratory, University of Ioannina, Greece
• Occupation or position held	Lecturer in Experimental Molecular Physics
Main activities and responsibilities	Research & teaching

Dates (from – to)	8/10/2012- 29/8/2014
• Name and address of employer	Atomic and Molecular Physics Laboratory, University of Ioannina, Greece
• Occupation or position held	Post-doctoral researcher
• Main activities and responsibilities	Interaction of strong asymmetric laser fields (two-color _ 800/400 nm_fs laser pulses) with gas phase polyatomic targets. Development of the 800/400nm setup and maintaining the fs laser system. Application of the asymmetric field on the control of laser induced molecular rearrangement (isomerization, hydrogen migration. Analysis of data, preparation of manuscripts, interacting with Phd & Master students.

• Dates (from – to)	6/10/2008 – 30/01/2011
• Name and address of employer	Biomolecular & Chemical Physics Laboratory, Strathclyde University, Glasgow
• Occupation or position held	Post-doctoral Research assistant
• Main activities and responsibilities	Developing the available at the time 2D Infrared spectrometer with the view of recording transient two dimensional IR spectra and ground electronic state 2D spectra following the photon echo technique. Applying these experimental techniques for ultrafast spectroscopic studies on [FeFe]Hydrogenase model systems relating to their structure, reactivity and vibrational relaxation dynamics.

• Dates (from – to)	5/11/2007-15/03/2008
• Name and address of employer	European Laboratory for Non-linear Spectroscopy (LENS), Florence, Italy.
• Occupation or position held	Post-doctoral research assistant
• Main activities and responsibilities	Optimizing the production efficiency of the 9^{th} order harmonic of a Ti: Sapphire laser (800nm, 25 fs) interacting with noble gases. Using a pumb-probe experimental scheme to apply the Ramsey type spectroscopic technique on the study of high-lying Rydberg bound atomic states of Ag (Spectroscopy in the XUV region).

• Dates (from – to)	2006- 30^{th} of june 2007 Archimedes II Research Program
• Name and address of employer	Centre for funding Research and Education
• Occupation or position held	Assistant researcher for the Atomic and Molecular Physics Laboratory,
Main activities and responsibilities	(University of Ioannina, Greece) for the project: "Acoustics Microscopy using ultrasounds of ultra- high frequency generated by laser irradiation of metallic and dielectric substrates".

TEACHING EXPERIENCE

• Dates (from – to)	2014 - today
• Name and address of employer	Physics Department, University of Ioannina, Ioannina, Greece.
• Occupation or position held	Lecturer in Experimental Molecular Physics
•Cources:	Laboratories of Electromagnetism, Optics - Waves & Acoustics, Experimental Methods in Atomic & Molecular Physics I, Molecular Physics

EXPERIMENTAL EXPERIENCE

• Multiple laser beam (pump / probe) experimental techniques for time resolved studies applied in different spectral regimes from:

i) mid-infrared _ Multidimensional Vibrational Spectroscopy
(Hole Burning/ Photon Echoes experimental approach).
ii) XUV/VUV _ Ramsey Spectroscopy using harmonics.
iii) UV/Vis_ applied in Coherent control experiments.

• Hands on experience with Ti:Saph fsec laser systems: Femtopower system: (25fs, 1W, 1KHz), Coherent system: (Micra & Mantis oscil, Evolution pump amplifier, Legend elite amplifier _30fs, 3W, KHz) Coherent system: (Micra oscil, Dual amplifier Legend elite_ 20fs, 6W, 1KHz).

• Hands on experience with picosecond laser systems acquired in the Atomic and Molecular Physics Laboratory in the University of Ioannina, Greece.

• Experience with ultra short laser pulses 4.5-8fs acquired during experiments performed in Astra Laser Facility of RAL (Rutherford Appleton Laboratory), England [August -September, 2006] & Max Planck Institute, Munich, Germany.

• Hands on experience with (Light Conversion _ Coherent) OPA systems acquired at Strathclyde University (spectral region from 300nm up to the mid infrared ~10μm) and University of Ioannina (1.2 – 2.0μm).

• Time of Flight Mass Spectrometry (TOF-MS) in linear and reflecting configuration (R-TOFMS).

• LIF (laser induced fluorescence) and time resolved emission studies with sub-nsec resolution (monitoring photons).

• High–order harmonic generation for application in VUV/XUV spectroscopy. The related experience was acquired at the LENS (European Laboratory for Non-linear Spectroscopy), Florence (Italy), during a 4-month experimental study of XUV Ramsey Spectroscopy (FT technique) of high-lying bound states of Krypton, Argon.

CURRENT RESEARCH ACTIVITIES:

• Development of a novel two – color asymmetric field (ω/2ω) with variable fundamental frequency in the spectral region (1.2 – 1.5μm) based on the Optical Parametric Amplifier & the Ultrafast laser system of the Central Laser Facility of Ioannina University. The composed field is expected to be strong enough (~5×10^{13}W/cm^2) to induce multi-electron dissociative ionization for various polyatomic targets. Coherent control experiments on the dissociative/ionization processes, sometimes involving molecular rearrangement prior to fragmentation, are already underway.

RESEARCH INTERESTS:

• Application of two-color asymmetric laser fields on the control of molecular rearrangement, taking place in the ionic manifold for polyatomic gas phase targets. The related research is focused on hydrogen migration processes and the formation of molecular hydrogen fragments (H_2^+ and H_3^+). So far, the case of toluene and methanol and some deuterium labeled isotopes have been experimentally studied with promising results (see the publication list).

• Time Resolved fs – Mass Spectrometry (5^{th} Harmonic centered at 160nm pump) – IR (800nm) probe applied on the investigation of structural dynamics in the neutral manifold. The experimental set-up will be upgraded employing VMI detection (ions & electrons) and integrating the OPA output in the setup to achieve wavelength variability in the probe beam.

• Ultrafast multidimensional Vibrational Spectroscopy (2D-IR spectroscopy, Transient – 2D IR spectroscopy) as a tool to understand:

- Vibrational relaxation dynamics (IVR, Solute – solvent interactions)
- Structural dynamics of transient species
- Reactivity of molecules in liquid phase

• Interaction of gas phase polyatomic molecules with strong laser fields (10^{14} – 10^{16}W/cm^2:

- Multielectron dissociative ionization (MEDI, Coulomb explosion)
- Isomerization processes taking place in the ionic manifold.
- Alignment/ orientation of molecules under ps and fs laser fields.

Publications in Research Journals

1. H. Li, N.G. Kling, B. Förg, J. Stierle, A. Kessel, Sergei A. Trushin, Matthias F. Kling, **S. Kaziannis**, "Carrier-envelope phase dependence of the directional fragmentation and hydrogen migration in toluene in few-cycle laser fields" submitted in Structural Dynamics (2015).

2. CC Papadopoulou, **S Kaziannis**, C Kosmidis. "Probing the dynamics of highly excited toluene on the fs timescale". Accepred for publication in *Phys. Chem.Chem. Phys* (2015).

3. N Kotsina, **S Kaziannis**, C Kosmidis, "Phase dependence of OD^+, HOD^+, and H_3^+ ions released from the deuterated dication of methanol under ω/2ω laser field irradiation". *Chem. Phys. Lett.* **380**,34, (2015).

4. S Kassavetis, **S Kaziannis**, N Pliatsikas, A Avgeropoulos, AE Karantzalis, C Kosmidis, E Lidorikis, P Patsalas, "Formation of plasmonic colloidal silver for flexible and printed electronics using laser ablation". *Appl.Surf. Sc*. 336, 262, (2015)

5. **Kaziannis. S**, Kotsina. N, and Kosmidis C. "Interaction of toluene with two-colour laser fields: controling the directional emission of molecular hydrogen fragments. *J. Chem. Phys.* **10**,141, (2014)

6. Kotsina. N, **Kaziannis. S**, and Kosmidis.C. "Hydrogen migration in methanol studied under asymmetric fs laser irradiation**"** *Chem.Phys.Lett.***604**,27-32, (2014)

7. E. Kyprianidou, T Lazarides, **S Kaziannis**, C Kosmidis, G Itskos, M Manos and A.J. Tasiopoulos. "Single crystal coordinating solvent exchange as a general method for the enhancement of the photoluminescence properties of lanthanide MOFs" *J. Materials Chem. A*. **2**, 5258, (2014)

8. Kotsina. N, **Kaziannis. S**, Danakas. S, Kosmidis.C. "Selective ionization/dissociation of oriented N_2O molecules by asymmetric fs laser field " *J. Chem. Phys*. 139, 104313, (2013).

9. **Kaziannis S**, Wright JA, Candelaresi M, Kania R, Greetham MG, Parker AW, Picket CJ and Hunt NT. „„The role of CN and CO ligands in the vibrational relaxation dynamics of model compounds of the [FeFe]-hydrogenase enzyme"" *Phys. Chem. Chem. Phys.* **13**, 10295, (2011).

10. Stewart AI, Wright JA, Greetham MG, **Kaziannis S**, Santabarbara S, Towrie M, Parker AW, Picket CJ and Hunt NT. "Determination of the photolysis products of [FeFe]hydrogenase enzyme model systems using ultrafast multidimensional infrared spectroscopy". *Inorg Chem.* **49**, 9563, (2010).

11. Femtosecond to microsecond photochemistry of a [FeFe]hydrogenase enzyme model compound" **Kaziannis S**, Santabarbara S, Wright JA, Greetham MG, Towrie M, Parker AW, Picket CJ and Hunt NT. *J Phys Chem B.* **114**, 15370, (2010).

12. Liontos, I., Cavalieri, S., Corsi, C., Eramo, R., **Kaziannis, S.**, Pirri, A., Sali, E., Bellini, M. "Ramsey spectroscopy of bound atomic states with extreme ultraviolet laser harmonics" *Optics Lett*. **35**, 832, (2010).

13. **Kaziannis, S**, Liontos, I., Karras, G., Corsi, C., Bellini, M., Kosmidis, C. *"* The ejection of triatomic molecular hydrogen ions H_3^+ produced by the interaction of benzene molecules with ultrafast laser pulses", *J. Chem. Phys.*131, 144308 (2009)

14. **Kaziannis, S.**, Kosmidis, C,. "The ejection anisotropy in the Coulomb explosion of some alkyl halide molecules under strong ps laser fields", *Chem. Phys. Lett.* 467, 281-286 (2009).

15. **Kaziannis S,** Kosmidis **C** and Lyras, A, "Alignment of ethyl halide molecules with strong picosecond laser fields", *J.Phys. Chem. A*. **112** 4754-4764 (2008)

16. **Kaziannis S** and Kosmidis C, "Comparative study of multielectron ionization of alkyl halides induced by picosecond laser irradiation", *J Phys Chem A*. **111** 2839-2851 (2007)

17. Patsalas P, **Kaziannis S,** Kosmidis C, Papadimitriou D, Abadias G and Evangelakis G.A, "Optimized pulsed laser deposition by wavelength and static electric field control: The case of tetrahedral amorphous carbon films", *J Appl Phys* **101** 1 (2007)

18. Kapakoglou N, Betzios I P, **Kaziannis S**, Kosmidis C, Drouza C, Manos M, Sigalas M, Keramidas A and Kabanos T, "Polyoxomolybdenum (V/VI)-Sulfite Compounds: Synthesis, Structure and Physical studies*", Inorg Chem***46** 6002-6010 (2007)

19. Kosmidis C, **Kaziannis S**, Siozos P, Lyras A, Robson L, Ledingham KWD,McKenna P and Jaroszynski DA, "Molecular hydrogen ion elimination from alkyl iodides under strong laser beam irradiation", *Int J of Mass Spectr.* **1** 1-8 (2006)

20. Siozos P, **Kaziannis S**, Kosmidis C and Lyras A, "Ionization/dissociation processes in some alkyl iodides induced by strong picosecond laser beam", *Int J of Mass Spectr*. **243** 189-198 (2005).

21. Kosmidis *C,* Siozos P, **Kaziannis S**, Robson L, Ledingham KWD, McKenna P and Jaroszynski DA "Interaction mechanism of some alkyl iodides with femtosecond laser pulses", *J Phys Chem A*. **109** 1279-1285 (2005).

22. **Kaziannis S** , Siozos P and Kosmidis C, "Dynamic alignment of CH_3I by strong picosecond laser pulses", *Chem Phys Lett.* **401** 115-121 (2005)

23. Siozos P, **Kaziannis S**, Kosmidis C, "Multielectron dissociative ionization of CH_3I under strong picosecond laser irradiation", *Int J of Mass Spectr.* **225** 249-259 (2003).