

CURRICULUM VITAE



T. Peter Rakitzis

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EDUCATION AND PROFESSIONAL EXPERIENCE

1988-1992	B.A., Physics (cum Laude), Cornell University
	B.A. Chemistry (Magna cum Laude), Cornell University
1992-1997	Ph.D. (major: Chemistry; minor: Physics), Stanford University, Thesis advisor: Richard N. Zare
1997-1999	Post-doctoral Research Associate (RA), Stanford University
1999-2000	Post-doctoral Research Associate, IESL-FORTH
2001-present	Associated Researcher and Group leader, IESL-FORTH
2001-2006	Lecturer, Department of Physics, University of Crete (UOC)
2006-2011	Assistant Professor, Dept. of Physics, UOC
2011-2016	Associate Professor, Dept. of Physics, UOC
2016-present	Professor, Dept. of Physics, UOC

RESEARCH HIGHLIGHTS

I have led research efforts, using polarized light, to develop new spectroscopic methods to control and probe matter on the microscopic level, and open the way for novel ultrasensitive measurements. Highlights include:

- Proposals for high-signal polarized nuclear fusion experiments, *Phys. Rev. Lett.* **118**, 233401 (2017).
- “Evanescent-wave and ambient chiral sensing by signal-reversing cavity-ringdown polarimetry” *Nature* **514**, 76 (2014), demonstrating new applications and limits for chiral sensing.
- Proposals for high-signal Parity Non-conservation experiments, for ultrasensitive chirality measurements [*Phys. Rev. Lett.* **108**, 210801 (2012) Editors’ Suggestion].
- Demonstration of cavity-based ellipsometry, for microsecond-resolved interfacial measurements:
 - a) Cavity Ring-Down Ellipsometry (CRDE) [*J. Chem. Phys.* **31**, 121101 (2009)].
 - b) Evanescent-Wave Cavity Ring-Down Ellipsometry (EW-CRDE) [Ref. 57, 60-1, 67, US patent 8941831].
- First measurement of the complete three-dimensional steric effect in a bimolecular chemical reaction (dependence of reactivity on approach geometry) [F. Wang, *Nature Chemistry* **4**, 636 (2012)]. See Ref. 59.
- Photofragment angular momentum description for polyatomic photodissociation [*JCP* **132**, 224310 (2010)]. http://jcp.aip.org/editors_choices_2010 and http://scitation.aip.org/upload/AIP/JCP/JCP_80th_Anniversary.pdf
- Proposal and demonstration for the pulsed-laser production of spin-polarized atoms and molecules by the time-dependent transfer of polarization from molecular rotational polarization via the hyperfine interaction [T.P. Rakitzis, *Phys. Rev. Lett.* **94**, 83005 (2005)]. See Refs. 37, 43-45, 49, and 67.
- First observation of the photofragment recoil deflection angle, from the photodissociation of OCS molecules three-dimensionally “fixed-in-space” [Rakitzis et al., *Science* **303**, 1852 (2004)]. See Refs. 29, 31, and 35.
- Production of spin-polarized hydrogen atoms from pulsed molecular photodissociation at high density [Rakitzis et al., *Science* **300**, 1936 (2003)], and pulsed laser-detection (see Refs. 30, 33, 34, 46, 47, and 53).
- First observation of interference in the photofragment orientation from molecular photodissociation [Rakitzis et al., *Science* **281**, 1346 (1998)], showing how the energy dependence gives the most detailed measurement of dissociative states (much better than current ab initio calculations). See Refs. 11-14, 38.

TEACHING EXPERIENCE

2016-17	Lecturer for Physics 303-4 (Quantum Mechanics I and II)
2010-16	Lecturer for Physics 467 (Atomic & Molecular Physics) U. of Crete (UOC).
2008-17	Lecturer for Physics Laboratories III (Optics), UOC
2006-7	Lecturer for Physics I (Fall semester; Classical mechanics and E&M), UOC. Lecturer for General Chemistry (Spring semester), UOC.
2004-5	Lecturer for Physics Laboratories II (Fall semester; Electromagnetism) and Laboratories III (Spring semester; Optics) UOC
2001-3	Lecturer for Physics I (Fall semester; Class. mechanics and E&M), UOC. Lecturer for Physics II (Spring semester; Modern Physics), UOC.
1992-7	Head Teaching Assistant, Stanford University, Chem. 273 & 31; T.A., Stanford University, Chem. 33 & 31, Cornell University, Chem. 208.

STUDENTS AND POSTDOCS

Mr. Chrysovalantis Kannis M.S. (2016-)
Dr. Anna Karaiskou Ph.D. (2002-2007)
Dr. Dimitris Sofikitis, Ph.D. (2006-2010), M.S. (2004-6), postdoc (2011-)
Lykourgos Bougas Ph.D. (2007-13). Awarded top PhD award at UOC for 2014.
Co-supervised: Vassiliki Bolpasi Ph.D. (2014), Grigoris Konstantinidis Ph.D. (2012), Melina Papa Ph.D. (2011).
Katerina Stamataki Ph.D. (2011-)
Alexandros Spiliotis Ph.D. (2014-), M.A. (2012-4)
Dr. Luis Rubio-Lago, postdoc (2004-2006)
Dr. Antonis Koubenakis, postdoc (2005-2007)
Dr. Jann Kruse, postdoc (2011-2)
Dr. Giorgios Katsoprinakis, postdoc (2010-)

RESEARCH GRANTS (principal investigator), Total funding ~ 3 MEu

- Greek Ministry of Education, Program P.EN.E.D. (2004-2007), 90 kEu., funding two Ph.D. students for three years, for applications of Polarization-Dependent Cavity Ring-down Spectroscopy.
- General Secretariat of Research and Technology (G.S.R.T.) of Greece, Program PYTHAGORAS (2004-2005), 70 kEu., for the development of the laser-detection of spin-polarized hydrogen, and applications.
- General Secretariat of Research and Technology of Greece, Program for Scientific collaboration between Greece and Russia (2005-2006), 12 kEu., between the groups of T.P. Raktizis and O.S. Vasyutinskii at the Ioffe Institute in St. Petersburg.
- G.S.R.T. of Greece, Program for Scientific collaboration between Greece and the USA (2006-2008), 60 kEu., between groups of T.P. Raktizis and R.N. Zare at Stanford University.
- European Research Council (ERC) Grant, (2009-2014), 910 kEu., “Time-resolved Ring-Cavity-Enhanced Polarization Spectroscopy (TRICEPS)”.
- Marie Curie Training Network Grant, (2009-2013), 200 kEu., “Imaging and Control in Chemistry (ICONIC)”.
- Marie Curie Industry-Academia Partnership and Pathways (IAPP), Grant, (2010-2014), 500 kEu., “SOPRALAB-FORTH Partnership (SOFORT)”.
- Greek Ministry of Education, Program Herakleitos, (2011-2014), 90 kEu., for Cavity-enhanced Polarimetry.
- European Research Council, Proof-of-Concept (PoC) Grant (BIOCARDE), (2012-2013), 150 kEu., for the construction of a precommercial, microsecond-resolved evanescent-wave cavity ring-down ellipsometer.
- European Research Council, Proof-of-Concept (PoC) Grant (CHIRALSENSE), (2015-2016), 150 kEu., for the construction of a precommercial, cavity-ring-down chiral polarimeter.
- ERA-NET, “Portable cavity-enhanced polarimeter for chiral sensing of gases and liquids” (EPOCHSE), (2016-2018), 100 kEu.
- EU H2020 FET-Open, “Ultrasensitive chiral detection by signal-reversing cavity polarimetry: applications to in-situ proteomics, single molecule chirality, HPLC analysis, medical diagnostics, and atmospheric studies” (ULTRACHIRAL), (2017-2021), 722 kEu.

INVITED TALKS

- “Reagent and product polarization in the reactions of atomic chlorine with methane and ethane”, Stereodynamics of Chemical Reactions, December 1996, Bielefeld, Germany.
- “Reagent and product alignment in the reactions of atomic chlorine with methane and ethane”, ACS, April 1997, San Francisco, CA, USA.
- “Multiple-surface wavepacket interference effects in the orientation and alignment of the $\text{Cl}(^2\text{P}_{3/2})$ polarization from the photolysis of ICl ”, XXIII Informal Conference on Photochemistry, May 1998, Pasadena, CA, USA.
- “Photodissociation, interference, and spin-polarized hydrogen atoms”, Stereodynamics of Chemical Reactions, December 2002, Schoorl, the Netherlands.
- “Spin Polarized Hydrogen Atoms from Molecular Photodissociation”, Physical Chemistry Seminar, January 27th 2003, Stanford University, CA, USA.
- “Spin Polarized Hydrogen Atoms from Hydrogen Halide Photodissociation”, International Conference on the Dynamics of Molecular Systems (MOLEC04), September 5-10 2004, Nunspeet, the Netherlands.
- “Pulsed-Laser preparation of highly polarized atoms”, XXth Conference on the Dynamics of Molecular Collisions (DMC2005), July 10-15 2005, Asilomar, CA, USA.
- “Pulsed-Laser preparation of polarized atoms”, CCP6 Workshop on Vector Correlation and Alignment in Chemistry, July 24-27 2005, Bristol, UK.
- “Pulsed-Laser production of spin-polarized atoms and molecules”, Workshop on Two colour experiments at synchrotron radiation sources: present and future, November 10-11 2005, ELLETRA Trieste, Italy.
- “New methods in the production and detection of spin-polarized hydrogen”, May 6-11 2007, (9th European Conference on Atoms, Molecules, and Photons (ECAMP IX), Hersonissos, Greece.
- “New directions opened by cavity-enhanced ellipsometry”, June 16-18 2008, (1st International conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N), Halkidiki, Greece.
- “Laser-detection of spin-polarized hydrogen: The effect of parent molecule rotation”, October 13-18 2008, Stereodynamics of Chemical Reactions, Dalian, China.
- “New Frontiers of Polarization Spectroscopy: from Coherent Dynamics to Microsecond-Resolved Ellipsometry”, Physical Chemistry Seminar, July 6th 2009, Cambridge University, UK.
- “Coherent effects in Polyatomic photodissociation”, October 28th - November 3rd 2010, Stereodynamics of Chemical Reactions, Santa Cruz CA, USA.
- “Ultra-high-density spin-polarized hydrogen atoms from molecular photodissociation”, Feb. 14 2011, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany.
- “Chiral Cavity Ring-Down”, Sep. 9-14 2012, European Conference on the Dynamics of Molecular Collisions (MOLEC), Oxford, UK.
- “Cavity-Enhanced Optical Rotation with Signal Reversals: Ultrasensitive Measurement of Chirality”, June 20th 2013, Atomic Physics Seminar, Department of Physics, University of Notre Dame.
- “Applications of chiral cavity ring down, and production of long-lived nuclear singlet states”, August 16-23 2014, Stereodynamics of Chemical Reactions, St. Petersburg, Russia.
- “Chiral Cavity-Enhanced Polarimetry”, November 6-11 2016, Stereodynamics of Chemical Reactions, Taipei, Taiwan.
- “Cavity-based chiral polarimetry: Towards atomic parity nonconservation measurements”, March 6-10 2017, AMOP-DPG (Spring Meeting), Mainz, Germany.
- “Cavity Ring-Down polarimetry”, June 12-15 2017, 12th International User Meeting on Cavity Enhanced Spectroscopy (CES2017), Egmond aan Zee, Netherlands.

PATENTS

- 1) US Patent number: 8941831, for a cavity-enhanced time-dependent ellipsometer: “Intra-cavity ellipsometer system and method”.
- 2) US Patent number: 9702812, titled “Cavity enhanced polarimeter and related methods”, for cavity-based chirality measurements.

INTERNATIONAL COLLABORATIONS

- 1) Prof. Maurice Janssen, Vrije Universiteit, Amsterdam, (8 papers).
- 2) Dr Andrew Alexander, University of Edinburgh, (8 papers).
- 3) Prof. Richard N. Zare, Stanford University, (6 papers, since appointment at UOC).
- 4) Prof. David Parker, University of Nijmegen, (3 papers).
- 5) Prof. Michael Everest, Westmont College (3 papers).
- 6) Prof. Victor Flambaum, and Dr. Vladimir Dzuba, University of New South Wales (2 papers).
- 7) Prof. Jonathan Sapirstein, Notre Dame (2 paper).
- 8) Prof. Dmitry Budker, Berkeley and Mainz (1 paper).
- 9) Prof. Claire Vallance, University of Oxford, paper (1 paper).
- 10) Prof. Gabriel Balint-Kurti, Bristol University, Prof. Al Brown, University of Alberta, Prof. J. Alberto Beswick, Toulouse, Dr Oleg Vasyutinskii, Ioffe Institute, St. Petersburg (1 paper).
- 11) Dr Kopin Liu, Academica Sinica (1 papers).
- 12) Dr Greg Hall, Brookhaven National Laboratory, (1 paper).
- 13) Jean-Louis Stehle, Sopralab Paris (1 paper).
- 14) Dr Andreas Osterwalder, EPFL (1 paper).

NATIONAL COLLABORATIONS

- 1) Prof. Theo Kitsopoulos, IESL-FORTH, (13 papers).
- 2) Dr. Benoit Loppinet, IESL-FORTH, (8 papers).
- 3) Prof. Stelios Tzortzakis, IESL-FORTH, (2 papers).
- 4) Dr. Wolf von Klitzing, IESL-FORTH (2 papers).
- 5) Prof. Dimitris Charalambidis, IESL-FORTH (1 paper).
- 6) Dr. Paris Tzallas, IESL-FORTH (1 paper)
- 7) Prof. Ilias Vardavas, UOC (1 paper).

JOURNAL REFEREE

Science, Phys. Rev. Lett., Phys. Rev. A, J. Chem. Phys., J. Phys. Chem. A, PCCP, Chem. Phys. Lett., Mol. Phys., Eur. Phys. J. D.

PEER-REVIEWED PUBLICATIONS (corresponding author is underlined).

1. A. J. Orr-Ewing, W. R. Simpson, **T. P. Rakitzis**, and R. N. Zare. "Preparing Reagents: Time Dependence of HCl($v=1, J$) alignment following pulsed infrared excitation," *Isr. J. Chem.* **34**, 95 (1994).
2. W. R. Simpson, A. J. Orr-Ewing, **T. P. Rakitzis**, S. A. Kandel, and R. N. Zare. "Core Extraction for Measuring State-to-State Differential Cross Sections of Bimolecular Reactions," *J. Chem. Phys.* **103**, 7299 (1995).
3. W. R. Simpson, **T. P. Rakitzis**, S. A. Kandel, A. J. Orr-Ewing, and R. N. Zare. "Reaction of Cl with Vibrationally Excited CH₄ and CHD₃: State-to-State Differential Cross Sections and Steric Effects for the HCl Product," *J. Chem. Phys.* **103**, 7313 (1995).
4. W. R. Simpson, **T. P. Rakitzis**, S. A. Kandel, T. Lev-On, and R. N. Zare. "Picturing the transition-state region and understanding vibrational enhancement for the Cl+CH₄ → HCl+CH₃ reaction," *J. Phys. Chem.* **100**, 7938 (1996).
5. S. A. Kandel, **T. P. Rakitzis**, T. Lev-On, and R. N. Zare. "Dynamics for the Cl+C₂H₆ → HCl+C₂H₅ reaction examined through state-specific angular distributions," *J. Chem. Phys.* **105**, 7550 (1996).
6. S. A. Kandel, **T. P. Rakitzis**, T. Lev-On, and R. N. Zare. "Dynamical effects of reagent vibrational excitation in the Cl+C₂H₆($v_5=1$) → HCl+C₂H₅ reaction," *Chem. Phys. Lett.* **265**, 121 (1997).
7. A. J. Orr-Ewing, W. R. Simpson, **T. P. Rakitzis**, S. A. Kandel, and R. N. Zare. "Scattering-angle resolved product rotational alignment for the reaction of Cl with vibrationally excited methane," *J. Chem. Phys.* **106**, 5961 (1997).
8. **T. P. Rakitzis**, S. A. Kandel, and R. N. Zare. "Determination of differential-cross-section moments from polarization-dependent product velocity distributions of photoinitiated bimolecular reactions," *J. Chem. Phys.* **107** 9382 (1997).
9. **T. P. Rakitzis**, S. A. Kandel, T. Lev-On, and R. N. Zare. "Differential cross section moments for the Cl + C₂D₆ → DCl ($v'=0, J'=1$) + C₂D₅ and Cl + CD₄ → DCl ($v'=0, J'=1$) + CD₃ reactions: Location of the D-atom transfer in the transition-state region," *J. Chem. Phys.* **107**, 9392 (1997).
10. S. A. Kandel, **T. Peter Rakitzis**, T. Lev-On, R. N. Zare. "Angular distributions for the Cl+C₂H₆ → HCl+C₂H₅ reaction observed via multiphoton ionization of the C₂H₅ radical," *J. Phys. Chem. A* **102**, 2270 (1998).
11. **T. P. Rakitzis**, S. A. Kandel, and R. N. Zare. "Photolysis of ICl causes mass-dependent interference in the Cl(²P_{3/2}) photofragment angular momentum distributions," *J. Chem. Phys.* **108**, 8291 (1998).
12. **T. Peter Rakitzis**, S. Alex Kandel, Andrew J. Alexander, Zee Hwan Kim, and Richard N. Zare. "Photofragment helicity caused by matter-wave interference from multiple dissociative states," *Science* **281**, 1346 (1998).
13. **T. P. Rakitzis** and R. N. Zare. "Photofragment angular momentum distributions in the molecular frame: Determination and interpretation," *J. Chem. Phys.* **110**, 3341 (1999).
14. **T. P. Rakitzis**, S. A. Kandel, A. J. Alexander, Z. H. Kim, and R. N. Zare. "Measurements of Cl-atom photofragment angular momentum distributions in the photodissociation of Cl₂ and ICl," *J. Chem. Phys.* **110**, 3351 (1999).
15. P. C. Samartzis, B. L. G. Bakker, **T. P. Rakitzis**, D. H. Parker, T. N. Kitsopoulos. "Spin-orbit branching ratios for the Cl atom photofragments following the excitation of Cl₂ from 310 to 470 nm," *J. Chem. Phys.* **110**, 5201 (1999).
16. Z. H. Kim, A. J. Alexander, S. A. Kandel, **T. P. Rakitzis** and R. N. Zare. "Orientation as a probe of photodissociation dynamics", Faraday Division, Discussion 113, Stereochemistry and Control in Molecular Reaction Dynamics (1999).

17. **T. P. Rakitzis**, G. E. Hall, M. Costen, R. N. Zare, "Relationship between bipolar moments and molecular-frame polarization parameters in Doppler photofragment spectroscopy," *J. Chem. Phys.* **111**, 8751 (1999).
18. **T. P. Rakitzis**, P. C. Samartzis, and T. N. Kitsopoulos, "Observing symmetry breaking in the angular distributions of oriented photofragments using velocity mapping," *J. Chem. Phys.* **111**, 10415 (1999).
19. Peter C. Samartzis, Derek J. Smith, **T. Peter Rakitzis**, and Theofanis N. Kitsopoulos, "State resolved differential cross section measurement of $\text{Cl} + \text{C}_2\text{H}_6 \rightarrow \text{HCl} + \text{C}_2\text{H}_5$ reaction using single beam velocity mapping," *Chem. Phys. Lett.* **324**, 337 (2000).
20. Andrew J. Alexander, Zee Hwan Kim, S. Alex Kandel, Richard N. Zare, **T. Peter Rakitzis**, Yukako Asano, and Satoshi Yabushita, "Oriented chlorine atoms as a probe of a nonadiabatic photodissociation dynamics of molecular chlorine," *J. Chem. Phys.* **113**, 9022 (2000).
21. **T. Peter Rakitzis**, "Direct measurement of photofragment alignment from unnormalized Abel-invertible images," *Chem. Phys. Lett.* **342**, 121 (2001).
22. **T.P. Rakitzis**, P.C. Samartzis, and T.N. Kitsopoulos, "Complete measurement of $\text{S}(^1\text{D}_2)$ alignment from Abel-invertible images," *Phys. Rev. Lett.* **87**, 123001 (2001).
23. C.R. Gebhardt, **T.P. Rakitzis**, P.C. Samartzis, V. Ladopoulos, and T.N. Kitsopoulos, "Slice imaging: A new approach to Ion Imaging and Velocity Mapping," *Rev. Sci. Instrum.* **72**, 3848 (2001).
24. T.N. Kitsopoulos, C.R. Gebhardt, and **T.P. Rakitzis**, "Photodissociation study of CS_2 at 193 nm using slice imaging," *J. Chem. Phys.* **115**, 9727 (2001).
25. **T.P. Rakitzis**, T.N. Kitsopoulos, "Measurement of Cl and Br photofragment alignment using slice imaging," *J. Chem. Phys.* **116**, 9228 (2002).
26. N.A. Papadogiannis, G. Nersisyan, E. Goulielmakis, **T.P. Rakitzis**, E. Hertz, D. Charalambidis, G.D. Tsakiris and K. Witte, "Temporal characterization of short pulse third-harmonic generation in an atomic gas by a transmission grating Michelson interferometer," *Opt Lett.* **27**, 1561 (2002).
27. A.J. van den Brom, **T.P. Rakitzis**, J. van Heyst, T.N. Kitsopoulos, S.R. Jezowski, and M.H.M. Janssen, "State-to-state Photodissociation of $\text{OCS}(v_2=0,1|J/m)$: I. The angular recoil distribution of $\text{CO}(X^1\Sigma^+; v=0, J)$," *J. Chem. Phys.* **117**, 4255 (2002).
28. **T.P. Rakitzis**, P.C. Samartzis, R. Toomes, L. Tsigaridas, T.N. Kitsopoulos, M. Coriou, D. Chestakov, A.T.J.B. Eppink, and D.H. Parker, "Photofragment alignment from the photodissociation of HCl and HBr," *Chem. Phys. Lett.* **364**, 115 (2002).
29. **T.P. Rakitzis**, A.J. van den Brom, M.H.M. Janssen, "Molecular and laboratory frame photofragment angular distributions from oriented and aligned molecules," *Chem. Phys. Lett.* **372**, 187 (2003).
30. **T.P. Rakitzis**, P.C. Samartzis, R.L. Toomes, T.N. Kitsopoulos, Alex Brown, G.G. Balint-Kurti, O.S. Vasyutinskii, J.A. Beswick, "Spin Polarized Hydrogen Atoms from Molecular Photodissociation," *Science* **300**, 1936 (2003).
31. **T.P. Rakitzis**, A.J. van den Brom, M.H.M. Janssen, "Directional dynamics in photodissociation of oriented molecules" *Science* **303**, 1852 (2004).
32. R. L. Toomes, P. C. Samartzis, **T. P. Rakitzis** and T. N. Kitsopoulos, "Slice imaging of H-atom photofragments: Effects of the REMPI detection process on the observed velocity distribution," *Chemical Physics* **301**, 209 (2004).
33. **T.P. Rakitzis**, "Pulsed-Laser Production and Detection of Spin-Polarized Hydrogen Atoms" *ChemPhysChem* **5**, 1489 (2004).
34. **T.P. Rakitzis**, P.C. Samartzis, R.L. Toomes, T.N. Kitsopoulos, "Measurement of Br photofragment orientation and alignment from HBr photodissociation" *J. Chem. Phys.* **121**, 7222 (2004).
35. A.J. van den Brom, **T.P. Rakitzis**, M.H.M. Janssen, "Directional properties in the photodynamics of OCS," *J. Chem. Phys.* **121**, 11645 (2004).

36. A. Karaiskou, C. Vallance, V. Papadakis, I.M. Vardavas, **T.P. Rakitzis**, “Absolute absorption cross-section measurements of CO₂ in the ultraviolet from 200 to 206 nm at 295 and 373 K” *Chem. Phys. Lett.* **400**, 30 (2004).
37. **T.P. Rakitzis**, “Highly spin-polarized atoms and molecules from rotationally state-selected molecules” *Phys. Rev. Lett.* **94**, 83005 (2005); [also appeared in the Virtual Journal of Nanoscale Science & Technology, volume 11, issue 10, 2005].
38. Andrew J. Alexander, **T. Peter Rakitzis**, “Effects of long-range potentials on polarization of chlorine atoms from photodissociation of ICl” *Mol. Phys.* **103**, 1665 (2005).
39. A.J. van den Brom, **T.P. Rakitzis**, M.H.M. Janssen, “State-to-state photodissociation of carbonyl sulfide ($v_2=0,1|J|m$). II. The effect of initial bending on coherence of S(¹D₂) polarization” *J. Chem. Phys.* **123**, 164313 (2005).
40. L. Rubio-Lago, D. Sofikitis, A. Koubenakis, **T.P. Rakitzis**, “Laser preparation of spin-polarized atoms from molecular photodissociation” *Physica Scripta* **73**, C71-C75 (2006).
41. A.J. van den Brom, **T.P. Rakitzis**, M.H.M. Janssen, “Molecular-frame properties from photodissociation of laboratory-oriented symmetric top and chiral molecules” *Physica Scripta* **73**, C83-C88 (2006).
42. D.A. Chestakov, D.H. Parker, K.V. Vidma, **T.P. Rakitzis**, “Photofragment alignment in the photodissociation of I₂ from 450 to 510 nm” *J. Chem. Phys.* **124**, 024315 (2006).
43. L. Rubio-Lago, D. Sofikitis, A. Koubenakis, **T.P. Rakitzis**, “Time-dependent polarization transfer from molecular rotation to nuclear spin” *Phys. Rev. A* **74**, 042503 (2006).
44. Dimitris Sofikitis, Luis Rubio-Lago, Marion R. Martin, Davida J. Ankeny Brown, Nathaniel C.-M Bartlett, Richard N. Zare, **T. Peter Rakitzis**, “Preparation of highly polarized nuclei: observation and control of time-dependent polarization transfer from H³⁵Cl molecular rotation to ³⁵Cl nuclear spin” *Phys. Rev. A* **76**, 012503 (2007).
45. Dimitris Sofikitis, Luis Rubio-Lago, Marion R. Martin, Davida J. Ankeny Brown, Nathaniel C.-M Bartlett, Andrew J. Alexander, Richard N. Zare, **T. Peter Rakitzis**, “Optical control of ground-state atomic orbital alignment: Cl(²P_{3/2}) atoms from HCl ($v=2, J=1$) photodissociation” *J. Chem. Phys.* **127**, 144307 (2007).
46. Dimitris Sofikitis, Luis Rubio-Lago, Andrew J. Alexander, **T. Peter Rakitzis**, “Nanosecond Control and High Density Production of Spin-Polarized Hydrogen Atoms” *Europhys. Lett.* **81**, 68002 (2008).
47. Nathaniel C.M. Bartlett, Daniel J. Miller, Richard N. Zare, Dimitris Sofikitis, **T. Peter Rakitzis**, Andrew J. Alexander, “Preparation of aligned H₂ and HD by stimulated Raman pumping” *J. Chem. Phys.* **129**, 084312 (2008).
48. Dimitris Sofikitis, Luis Rubio-Lago, L. Bougas, Andrew J. Alexander, **T. Peter Rakitzis**, “Laser-detection of spin-polarized hydrogen from HCl and HBr photodissociation: Comparison of H- and halogen-atom polarizations” *J. Chem. Phys.* **129**, 144302 (2008).
49. Nathaniel C.M. Bartlett, Daniel J. Miller, Richard N. Zare, Andrew J. Alexander, Dimitris Sofikitis, **T. Peter Rakitzis**, “Time-dependent depolarization of aligned HD molecules” *PhysChemChemPhys.* **11**, 142 (2009).
50. Anna Karaiskou, Vassilis Papadakis, Benoit Loppinet, **T. Peter Rakitzis**, “Cavity ring-down ellipsometry,” *J. Chem. Phys.* **31**, 121101 (2009).
51. **T. Peter Rakitzis**, M.H.M. Janssen, “Photofragment angular momentum distributions from oriented and aligned polyatomic molecules: beyond the axial recoil limit,” *Mol. Phys.* **108**, 937 (2010).
52. **T. Peter Rakitzis**, Andrew J. Alexander “Photofragment angular momentum distributions in the molecular frame II: Single state dissociation, multiple state interference, and non-axial recoil in photodissociation of polyatomic molecules” *J. Chem. Phys.* **132**, 224310 (2010). [Editor choice for 2010, http://jcp.aip.org/editors_choices_2010, and selected as highlight for 80th JCP anniversary: http://scitation.aip.org/upload/AIP/JCP/JCP_80th_Anniversary.pdf]

53. Lykourgos Bougas, Dimitris Sofikitis, Michael A. Everest, Andrew J. Alexander, **T. Peter Rakitzis**, “(2+1) laser-induced fluorescence of spin-polarized hydrogen atoms” *J. Chem. Phys.* **133**, 174308 (2010).
54. **T. Peter Rakitzis**, “Photofragment angular momentum distributions in the molecular frame III: Coherent effects in the photodissociation of polyatomic molecules with circularly polarized light” *J. Chem. Phys.* **133**, 204301 (2010).
55. Lykourgos Bougas and **T. Peter Rakitzis**, “Parent-molecule rotational depolarization of photofragment angular momentum distributions: diatomic and polyatomic molecules” *PhysChemChemPhys.* **13**, 8526 (2011).
56. M.L. Lipciuc, **T.P. Rakitzis**, G.C. Groenenboom, W. Leo Meerts, **M.H.M. Janssen**, “Quantum state-to-state photodissociation of OCS($v_2=1/Jl=11$): Variation of S(1D_2) electronic polarization with correlated single rotational quantum states of CO(J),” *PhysChemChemPhys.* **13**, 8549 (2011).
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INVITED CHAPTER CONTRIBUTIONS

- “Imaging in Chemical Dynamics; Technology and Applications” Ben Whitaker (Ed.), Cambridge University Press, Cambridge, 2003.
 - (1) Chapter 4, “Orientation and Alignment,”
 - (2) Chapter 10, “Measurement of state resolved differential cross-sections of bimolecular reactions using single beam velocity imaging,” with T.N. Kitsopoulos,
 - (3) Chapter 11, “Slice imaging: a new approach to ion imaging and velocity mapping,” with T.N. Kitsopoulos
- “Chiral Analysis”, Prasad L. Polavarapu (Ed.), Elsevier, Amsterdam, 2017.
 - (4) Chapter 18, “Cavity-based Chiral Polarimetry”, with D. Sofikitis, G.E. Katsoprinakis, and A.K. Spiliotis.