

Hrvoje Petek – List of Publications

Invited and Review Articles:

1. H. Petek, "[Viewpoint: The Calisthenics of Surface Femtochemistry](#)," *Physics* **9**, 123 (2016)
2. H. Petek, "[Imaging: Nano meets femto](#)," News &Views article in *Nature Nano.* **11**, 404 (2015).
3. H. Petek, "[Single molecule femtochemistry – molecular imaging at the space-time-limit](#)," *ACS Nano* (invited Perspective Article) **8**, 5 (2014).
4. M. Hase, M. Katsuragawa, A. M. Constantinescu, and H. Petek, "Coherent Phonon Induced Optical Modulation in Semiconductors at Terahertz Frequencies," *New J. Phys.* **15**, 055018 (2013).
5. T. Huang, J. Zhao, M. Feng, A. Popov, S. Yang, L. Dunsch, and H. Petek "A Multi-state Single-molecule Switch Actuated by Rotation of an Encapsulated Cluster within a Fullerene Cage," *Chem. Phys. Lett. Frontiers Article* **552**, 1 (2012).
6. H. Petek, "Photoexcitation of Adsorbates on Metal Surfaces: One-step or Three Step," *J. Chem. Phys.* **137**, 091704 (2012). (Invited Essay in the Special Issue on Surface Photochemistry)
7. A. Kubo, and H. Petek, "Imaging of Surface Plasmon Polariton Fields by Femtosecond Laser Excited Photoemission Electron Microscopy," *Hyoumen Kagaku (Journal of the Surface Science Society of Japan)* **33**, 235 (2012) (in Japanese).
8. M. Feng, C. Lin, J. Zhao, and H. Petek, "Orthogonal intermolecular interactions of CO molecules on a one-dimensional substrate," *Ann. Rev. Phys. Chem.* **63**, 201 (2012).
9. M. Feng, J. Zhao, T. Huang, X. Y. Zhu, and H. Petek, "The Electronic Properties of Superatom States of Hollow Molecules," *Acc. Chem. Res.* **44**, 360 (2011).
10. H. Petek and J. Zhao, "Ultrafast Interfacial Proton-coupled Electron Transfer," *Chem. Rev.* **110**, 7082 (2010).
11. T. Minato, Y. Sainoo, Y. Kim, H. S. Kato, K.-I. Aika, M. Kawai, J. Zhao, H. Petek, T. Huang, W. He, B. Wang, Z. Wang, Y. Zhao, J. Yang, and J. G. Hou "The Electronic Structure and Spatial Distribution of Excess Charge Created by Oxygen Atom Vacancies on Titanium Dioxide Surfaces," *Hyoumen Kagaku (Journal of the Surface Science Society of Japan)* **31**, 474-479 (2010) (in Japanese).
12. A. Kubo and H. Petek, "Femtosecond Time-resolved Photoemission Electron Microscope Studies of Surface Plasmon Dynamics," *J. Vac. Soc. Jap.* **51**, 368 (2008) (in Japanese).

13. K. Ishioka, M. Hase, M. Kitajima, and H. Petek, "Diamonds are Forever... Oscillating Coherently," *SPIE Newsroom* (2007).
14. A. Kubo, Y. S. Jung, H. K. Kim, and H. Petek, "Femtosecond Microscopy of Localized and Propagating Surface Plasmons in Silver Gratings" *J. Phys. B* **40**, S259 (2007).
15. H. Petek, "Editorial," *Prog. Surf. Sci.* **82**, 1 (2007).
16. J. Yates, and H. Petek, "Introduction: Photochemistry and Photophysics on surfaces," *Chem. Rev.* **106**, 4113 (2006).
17. J. Zhao, B. Li, K. Onda, M. Feng, and H. Petek, "Solvated Electrons on Metal Oxide Surfaces," *Chem. Rev.* **106**, 4402 (2006).
18. A. Kubo, K. Onda, H. Petek, Z. Sun, Y.-S. Jung, and H. -K. Kim, "Femtosecond imaging of surface plasmon dynamics," *SPIE Nanotechnology* **8**, 3 (2005).
19. M. Kitajima, M. Hase, and H. Petek, "Real Time Observation of Fano Interference in Si" *Butsuri (Bulletin of the Physical Society of Japan)* **59**, 888-892 (2004) (in Japanese).
20. H. Petek and S. Ogawa, "Surface Femtochemistry: Observation and Quantum Control of Frustrated Desorption of Alkali Atoms from Noble Metals," *Ann. Rev. Phys. Chem.* **53**, 507 (2002).
21. H. Petek, M. J. Weida, H. Nagano, and S. Ogawa, "Surface Femtochemistry: Frustrated Desorption of Alkali Atoms from Noble Metals," *Feature Article, J. Phys. Chem.* **105**, 6767 (2001).
22. S. Ogawa, H. Nagano, and H. Petek, "Time-resolved Two-photon Photoemission Studies of Surfaces," *Nihon Butsuri Gakkai Shu*, **54**, 543 (1999) (in Japanese).
23. S. Ogawa and H. Petek, "Femtosecond Two-photon Time-Resolved Photoemission Spectroscopy," *Kotai Butsuri* **33**, 199 (1998) (in Japanese).
24. S. Ogawa and H. Petek, "Two-photon Time-resolved Photoemission," *Hyoumen Kagaku* **19**, 72 (1998) (in Japanese).
25. H. Petek and S. Ogawa, "Femtosecond Time-resolved Two-Photon Photoemission Studies of Electron Dynamics in Metals," *Prog. Surf. Sci.* **56**, 239 (1997).
26. S. Ogawa and H. Petek, "Limits and Applications of Femtosecond Lasers" *Kagaku and Kogaku* **49**, 916 (1996), (invited; in Japanese).
27. W.D. Lawrance, C.B. Moore, and H. Petek, "Understanding Molecular Dynamics Quantum-State by Quantum-State," *Science* **227**, 895 (1985).

Books and Book Chapters:

28. M. Feng and H. Petek, "Scrutinizing the Endohedral Space: Superatom States and Molecular Machines," chapter in *Endohedral Fullerenes: Electron transfer and spin*, A. Popov ed., Springer (2016)

29. A. Winkelmann, C.-T. Chiang, C. Tusche, A.A. Ünal, A. Kubo, L. Wang, and H. Petek, "Ultrafast multiphoton photoemission microscopy of solid surfaces in the real and reciprocal space," chapter in *Dynamics of interfacial electron and excitation transfer in solar energy conversion: theory and experiment*, P. Piotrowiak, ed., Royal Society of Chemistry, Cambridge (2013).
30. *Dynamics at Solid Surfaces and Interfaces, Vol. 2: Fundamentals*. U. Bovensiepen, H. Petek, and M. Wolf eds., Wiley, Weinheim (2012).
31. H. Petek and A. Kubo, "Ultrafast microscopy of plasmon dynamics in nanostructured surfaces metal," chapter in *Handbook of Instrumentation and Techniques for Semiconductor Nanostructure Characterization*, pp183-210. R. Haight, F. Ross, and J. Hannon eds., World Scientific Press (2011).
32. H. Petek, M. Feng, and J. Zhao, "The Electronic structure of Metal-Molecule Interfaces," chapter in *Current Driven Phenomena in Nanoelectronics*, pp 1-25. T. Seideman ed., Pan Sanford, Singapore (2011).
33. *Dynamics at Solid Surfaces and Interfaces, Vol. 1: Current developments*. U. Bovensiepen, H. Petek, and M. Wolf eds., Wiley, Weinheim (2010).
34. A. Winkelmann, C.-T. Chiang F. Bisio, W.-C. Lin, J. Kirschner, and H. Petek, "Higher order photoemission from metal surfaces," chapter in *Dynamics at Solid Surfaces and Interfaces, Vol. I*, pp 33-51 U. Bovensiepen, H. Petek, and M. Wolf, eds., Wiley (2010).
35. H. Petek, "Physical Chemistry of Photochromism - Reaction Mechanism" chapter in *Photochromism in Organic Molecules*, Kikan Kagaku Sosetsu 28, Y. Taniguchi, and M. Irie eds., Gakkai Shuppan Center, Tokyo (1996); pp 25-48 (invited; in Japanese).
36. W.D. Lawrance, C.B. Moore, and H. Petek, "Understanding Molecular Dynamics Quantum-State by Quantum-State," in *Frontiers in the Chemical Sciences*, W. Spindel and R.M. Simon, eds., American Association for the Advancement of Science, Washington (1986); pp 17-32.

Refereed Journal Articles:

37. K. Ishioka, A. Rustagi, A. Beyer, W. Stolz, K. Volz, U. Höfer, H. Petek, and C. J. Stanton, "Sub-picosecond Acoustic Pulses Generated at Buried GaP/Si Interfaces," *Phys. Rev. B* (submitted).
38. S. Tan, J. Ren, L. Liu, J. Zhao, H. Petek, "Hot Electron Processes in a Plasmonic Heterojunction: Ag Nanocluster Decorated Graphite," *J. Am. Chem. Soc.* (submitted).
39. M. Schmid, K. Ishioka, A. Beyer, B. P. Klein, C. K. Krug, M. Sachs, H. Petek, C. J. Stanton, W. Stolz, K. Volz, J. M. Gottfried, and U. Höfer, "Direct Characterization of Band Bending in GaP/Si(001) Heterostructures with Hard X-ray Photoelectron Spectroscopy," *Appl. Phys. Lett.* (submitted).

40. Q. Zheng, W. A. Saidi, H. Petek, and J. Zhao, "Phonon Assisted Ultrafast Charge Transfer at MoS₂/WS₂ Interface," *Nano Lett.* (submitted).
41. M. Dąbrowski, Y. Dai, M. Hocevar, S. Frolov and H. Petek "Nanoscale guiding and Shaping of Indium Droplets," *Appl. Phys. Lett.* (submitted)
42. S. Tan, A. Argondizzo, L. Liu, J. Zhao, and H. Petek, "Plasmonic Enhancement of Two-Photon Photoemission at Ag Nanocluster Decorated TiO₂(110) Surfaces," *Nature Chem.* (submitted),
43. W. Chu, W. A. Saidi, Q. Zheng, Y. Xie, Z. Lan, O. Prezhdo, H. Petek, and J. Zhao, "[Ultrafast Dynamics of Photon-Generated Holes at CH₃OH/TiO₂ Rutile Interface](#)," *J. Am. Chem. Soc.* **138**, 13740 (2016).
44. S. Tan, A. Argondizzo, X. Cui, and H. Petek, "Ultrafast Multiphoton Electronic Heating of Graphite," *Phys. Rev. X*, (submitted).
45. K. Ishioka, A. Rustagi, U. Höfer, H. Petek, C. Stanton, "[Ultrashort Acoustic Pulses Generated in Si and GaP](#)," *Phys. Rev. B* **xx**, xxx (submitted).
46. M. Dąbrowski, Y. Dai, A. Argondizzo, Q. Zou, X. Cui, and H. Petek, "[Multiphoton photoemission microscopy of high-order plasmonic resonances at the Ag/vacuum and Ag/Si interfaces of epitaxial Ag nanowires](#)," *ACS Photonics* **9**, 1704 (2016).
47. A. Argondizzo, S. Tan, and H. Petek, "[Resonant Two-Photon Photoemission from Ti-3d Defect States of TiO₂\(110\) Revisited](#)," *J. Phys. Chem. C* **120**, 12959 (2015).
48. K. Ishioka, K. Brixius, A. Beyer, A. Rustagi, C. J. Stanton, W. Stolz, K. Volz, U. Höfer, and H. Petek, "[Coherent Phonon Characterization of Electronic Bands of at Buried Semiconductor Heterointerfaces](#)," *Appl. Phys. Lett.* **108**, (2016).
49. S. Zhang, C. Wang, X. Cui, Y. Wang, A. Argondizzo, J. Zhao, and H. Petek, "Time-Resolved Photoemission Study of the Electronic Structure and Dynamics of Chemisorbed Alkali Atoms on Ru(0001)," *Phys. Rev. B* **93**, 045401 (2016).
50. K. Ishioka, K. Brixius, U. Höfer, A. Rustagi, E. M. Thatcher, C. J. Stanton, and H. Petek, "Dynamically Coupled Plasmon-Phonon Modes in GaP: an Indirect, Polar Semiconductor," *Phys. Rev. B* **92**, 205203 (2015).
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54. A. Argondizzo, X. Cui, C. Wang, H. Sun, H. Shang, Jin Zhao, and H. Petek, "Ultrafast multiphoton pump-probe photoemission pathways in rutile TiO₂," *Phys. Rev. B*, 155429 (2015).
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58. M. Feng, H. Sun, J. Zhao, and H. Petek, "Self-Catalyzed Carbon Dioxide Adsorption by Metal-Organic Chains on Gold Surfaces," *ACS Nano* **8**, 8644 (2014).
59. J. Zhao and H. Petek "Nonnuclear Attractors as Conductive Channels in Molecular Electronics" *Phys. Rev. B* **90**, 075412 (2014).
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64. M. Li, S. Huang, Q. Wang, K. P. Chen, and H. Petek, "Ultrafast Laser Fabrication of Nonlinear Lightwave Circuits in Chalcogenide Glasses," *Opt. Lett.* **39**, 693 (2014).
65. L.-M. Wang and H. Petek, "Focusing Surface Plasmon Polariton Wave Packets in Space and Time," *Laser Photonics Rev.* **7**, 1003 (2013).
66. L. Zhang, A. Kubo, L.-M. Wang, H. Petek, and T. Seideman, "Universal Aspects of Ultrafast Optical Pulse Scattering by a Nanoscale Asperity," *J. Phys. Chem. C* **117**, 18648 (2013).
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74. C. Lin, M. Feng, J. Zhao, P. Cabrera-Sanfelix, D. Sánchez Portal, A. Arnau, and H. Petek, "Theory of Orthogonal Interactions of CO molecules on a One-dimensional Substrate," *Phys. Rev. B* **85**, 125426 (2012).
75. L. Zhang, A. Kubo, L. Wang, H. Petek, and T. Seideman, "Imaging Surface Plasmon Polariton Fields Excited at an Nanometer-scale Slit," *Phys. Rev. B* **84**, 245442 (2011).
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79. R. Jorn, T. Seideman J. Zhao, and H. Petek, "Current-Driven Dynamics in Molecular Junctions. Endohedral Fullerenes," *ACS Nano* **5**, 7858 (2011).
80. F. Bisio, A. Winkelmann, C. -T. Chiang, H. Petek, and J. Kirschner, "Band structure Effects in Above Threshold Photoemission," *J. Phys.: Condens. Matter* **23**, 485002 (2011).
81. L. Wang, V. Sametoglu, A. Winkelmann, J. Zhao, and H. Petek, "Two-photon Photoemission Study of the Coverage Dependent Electronic Structure of Chemisorbed Alkali Atoms on Metal Surfaces," *J. Phys. Chem. A* **115**, 9479 (2011)

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87. J. Zhao, J. Yang, and H. Petek, "Theoretical study of the molecular and electronic structure of methanol on a TiO₂(110) surface," *Phys. Rev. B* **80**, 235416 (2009).
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89. F. Bisio, A. Winkelmann, W.-C. Lin, M. Nyvlt, H. Petek, and J. Kirschner, "Band structure effects in surface second harmonic generation: the case of Cu(001)," *Phys. Rev. B* **80**, 125432 (2009).
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