Curriculum Vitae

Shoichi Yamaguchi

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Date of Birth	February 17, 1968
Mailing Address	Department of Applied Chemistry, Graduate School of Science and Engineering, Saitama University
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Academic Background

1998	Ph.D.	Department of Chemistry, School of Science, University of Tokyo Advisor: Prof. Hiro-o Hamaguchi
1992	M.S.	Department of Physics, School of Science, University of Tokyo Advisor: Prof. Takayoshi Kobayashi
1990	B.S.	Department of Physics, School of Science, University of Tokyo

Professional Appointments

2014 - Present	Professor, Department of Applied Chemistry, Graduate School of Science and Engineering, Saitama University
2002 - 2014	Senior Research Scientist, Molecular Spectroscopy Laboratory, RIKEN
1998 - 2002	Senior Researcher, Yokohama Research Center, Analytical Science Laboratory, Mitsubishi Chemical Co.
1995 - 1997	Assistant Professor, Department of Basic Science, Graduate School of Arts and Science, University of Tokyo
1992 - 1995	Research Associate, Molecular Spectroscopy Laboratory, Kanagawa Academy of Science and Technology

Awards

2023	International Investigator Award of the Japan Society for Molecular Science
2011	Masao Horiba Award
2009	RIKEN Research Incentive Award

Professional Affiliations

Japan Society for Molecular Science
American Chemical Society
Spectroscopical Society of Japan

Teaching

2014 - Present	Physical Chemistry, Nonlinear Spectroscopy, and Chemistry Experiments at Department of Applied Chemistry, Graduate School of Science and Engineering, Saitama University for Graduate and Undergraduate Students
2012	Nonlinear Spectroscopy at Summer School 2012 for Young Researchers in Molecular Science
2004, 2012	Nonlinear Spectroscopy at Saitama University for Graduate Students
1995 - 1997	Fundamental Chemistry Experiments at the University of Tokyo for Undergraduate Students

Presentations at International Meetings

[47] "Surface SFG Spectroscopy of Water", *Oral Presentation*, Shoichi Yamaguchi, *8th Asian Spectroscopy Conference (ASC2023)*, September 2023, Tokamachi, Niigata, Japan. (Invited Lecture)
[46] "Surface SFG Spectroscopy of Water", *Oral Presentation*, Shoichi Yamaguchi, *International Conference on "Nonlinear Optics at Interfaces"*, June 2023, Rome, Italy. (Invited Lecture)
[45] "Surface SFG Spectroscopy of Ice", *Oral Presentation*, Shoichi Yamaguchi, *Telluride workshop "Structure and Dynamics of Ice Surfaces"*, June 2022, Telluride, Colorado, USA. (Invited Lecture)
[44] "Surface SFG Spectroscopy of Water", *Oral Presentation*, Shoichi Yamaguchi, *Telluride workshop "Nonlinear Optics at Interfaces"*, June 2022, Telluride, Colorado, USA. (Invited Lecture)
[43] "Liposome diffusion on a glass-supported lipid bilayer", *Poster Presentation*, Ten Miyazaki, Miyuki Sakaguchi, Shoichi Yamaguchi, and Takuhiro Otosu, *ACS Spring 2022 National Meeting & Exposition*, March 2021, Online (San Diego, California).
[42] "Development of a diamond anvil cell confocal Raman microscope and its application to high-pressure phases of ice and clathrate hydrate", *Poster Presentation*, Kota Kishi, Tetsuyuki Takayama, Miyuki Sakaguchi, Takuhiro Otosu, and Shoichi Yamaguchi, *ACS Spring 2022 National Meeting & Exposition*, March 2021, Online (San Diego, California).
[41] "Raman spectroscopy of isotopically pure and diluted low- and high-density amorphous ices", *Poster Presentation*, Senri Ishihara, Miyuki Sakaguchi, Takuhiro Otosu, and Shoichi Yamaguchi, *ACS Spring 2022 National Meeting & Exposition*, March 2021, Online (San Diego, California).
[40] "Heterodyne-detected sum frequency generation spectroscopy of isotopically-diluted wa-

ter/vapor interfaces", *Oral Presentation*, Shoichi Yamaguchi, *Trombay Symposium on Radiation & Photochemistry (TSRP-2022)*, January 2022, Online (Mumbai, India). (Invited Lecture)
[39] "Heterodyne-detected sum frequency generation spectroscopy of isotopically-diluted water/vapor interfaces", *Oral Presentation*, Shoichi Yamaguchi, *Pacifichem 2021*, December 2021, Online (Honolulu, Hawaii, USA). (Invited Lecture)
[38] "Heterodyne-detected sum frequency generation spectroscopy of isotopically-diluted water/vapor interfaces", *Oral Presentation*, Shoichi Yamaguchi, *ACS Fall 2021 National Meeting & Exposition*, August 2021, Online (Atlanta, Georgia).
[37] "Vibrational Spectroscopy of Ice", *Oral Presentation*, Shoichi Yamaguchi, *International Workshop on Nonlinear Optics at Interfaces*, June 2019, Shanghai, China. (Invited Lecture)
[36] "Surface Structure of Ice Ih Revealed by Sum Frequency Generation Spectroscopy and Theoretical Modeling", *Oral Presentation*, Shoichi Yamaguchi, *IMS Symposium "Water at Interfaces 2018"*, January 2019, Okazaki, Japan. (Invited Lecture)
[35] "Surface Structure of Ice Ih Revealed by Sum Frequency Generation Spectroscopy and Theoretical Modeling", *Oral Presentation*, Shoichi Yamaguchi, Yuki Nojima, and Hajime Torii, *Joint Conference of EMLG/JMLG Annual Meeting 2018 and 41st Symposium on Solution Chemistry of Japan "Understanding of Molecular Liquids and Its Extension to New Fields"*, November 2018, Nagoya, Japan.
[34] "Heterodyne-Detected SFG Spectroscopy of Ice Surface & Lipid Interfaces", *Oral Presentation*, Shoichi Yamaguchi, *Telluride workshop "Nonlinear Optics at Interfaces"*, June 2018, Telluride, Colorado, USA. (Invited Lecture)
[33] "Heterodyne-Detected SFG Spectroscopy of Ice", *Oral Presentation*, Shoichi Yamaguchi, *Trombay Symposium on Radiation & Photochemistry (TSRP-2018)*, January 2018, Mumbai, India. (Invited Lecture)
[32] "Surface vibrational spectra of water and ice", *Oral Presentation*, Shoichi Yamaguchi, *International Symposium on "Diversity of Chemical Reaction Dynamics"*, July 2017, Himeji, Japan. (Invited Lecture)
[31] "Aqueous Interfaces Probed by Heterodyne-Detected Sum Frequency Generation Spectroscopy", *Oral Presentation*, Shoichi Yamaguchi, *9th International Conference on Advanced Vibrational Spectroscopy*, June 2017, Victoria, Canada. (Invited Lecture)
[30] "Heterodyne-Detected Sum Frequency Generation Spectroscopy of Aqueous Interfaces", *Oral Presentation*, Shoichi Yamaguchi, *253rd ACS National Meeting*, April 2017, San Francisco, California, USA. (Invited Lecture)
[29] "Molecular Structure of Liquid Interfaces Probed by Sum Frequency Generation Spectroscopy", *Oral Presentation*, Shoichi Yamaguchi, *2nd International Workshop on Heterogeneous Kinetics Related to Atmospheric Aerosols*, November 2016, Tsukuba, Japan. (Invited Lecture)
[28] "Single-Channel Heterodyne-Detected Sum Frequency Generation Spectroscopy for Liquid Interfaces", *Oral Presentation*, Shoichi Yamaguchi, *Pacifichem 2015*, December 2015, Honolulu, Hawaii, USA. (Invited Lecture)
[27] "Heterodyne-Detected SFG Spectroscopy for Liquid Interfaces", *Oral Presentation*, Shoichi Yamaguchi, *New Developments in Surface Spectroscopy and Microscopy in 97th Canadian Chem-*

istry Conference and Exhibition, June 2014, Vancouver, Canada. (Invited Lecture)

[26] "Heterodyne-Detected SFG Spectroscopy for Liquid Interfaces", *Oral Presentation*, Shoichi Yamaguchi, *Symposium on Molecular Science and Synthesis of Functional Molecules for Next Generation*, March 2014, Hiroshima, Japan. (Invited Lecture)

[25] "Interface-Selective Heterodyne-Detected Second-Order Nonlinear Spectroscopy", *Oral Presentation*, Shoichi Yamaguchi, *CRC International Symposium. New Challenges on the Bio-interfaces: Structures and Dynamics*, February 2013, Sapporo, Japan. (Invited Lecture)

[24] "Two-Dimensional Heterodyne-Detected Vibrational Sum Frequency Generation Spectroscopy", *Oral Presentation*, Shoichi Yamaguchi, *14th International Conference on Vibrations at Surfaces*, September 2012, Kobe, Japan.

[23] "Interface-Selective Heterodyne-Detected Second-Order Nonlinear Vibrational Spectroscopy", Shoichi Yamaguchi, *23rd International Conference on Raman Spectroscopy (ICORS)*, August 2012, Bangalore, India. (Invited Lecture)

[22] "Nonlinear Laser Spectroscopy for Surfaces and Interfaces of Liquids", *Oral Presentation*, Shoichi Yamaguchi, *CAS-RIKEN Frontier Science Workshop 2012*, May 2012, Oiso, Japan. (Invited Lecture)

[21] "Interface-Selective Heterodyne-Detected Second-Order Nonlinear Spectroscopy", Shoichi Yamaguchi, *15th East Asian Workshop on Chemical Dynamics*, May 2011, Pohang, South Korea. (Invited Lecture)

[20] "Interface-Selective Even-Order Nonlinear Spectroscopy", Shoichi Yamaguchi, *The 3rd Asia-Pacific Symposium on Radiation Chemistry*, September 2010, Lonavala, India. (Invited Lecture)

[19] "Interface-Selective Heterodyne-Detected Second-Order Nonlinear Spectroscopy", Shoichi Yamaguchi and Tahei Tahara, *Mini-Workshop on Liquid Surface*, December 2009, Seoul, South Korea. (Invited Lecture)

[18] "Interface-Selective Heterodyne-Detected Second-Order Nonlinear Spectroscopy", Shoichi Yamaguchi and Tahei Tahara, *2nd Asian Spectroscopy Conference*, November 2009, Seoul, South Korea. (Invited Lecture)

[17] "Interface-Selective Heterodyne-Detected Second-Order Nonlinear Spectroscopy", Shoichi Yamaguchi, *Morino Lecture / International Workshop on Chemistry in the Earth's Atmosphere*, September 2009, Tokyo, Japan. (Invited Lecture)

[16] "Novel Interface-Selective Even-Order Nonlinear Spectroscopy", Shoichi Yamaguchi and Tahei Tahara, *35th annual Federation of Analytical Chemistry and Spectroscopy Societies* (*FACSS 2008*), September 2008, Reno, Nevada, USA. (Invited Lecture)

[15] "Interferometric Measurement of Electronic Sum Frequency Generation for Revealing Absolute Orientation of Interfacial Molecules: Real and Imaginary Parts of Electronic $\chi^{(2)}$ Spectrum", Shoichi Yamaguchi and Tahei Tahara, *67th Okazaki Conference*, November 2007, Okazaki, Japan.

[14] "New Interface-Selective Even-Order Nonlinear Spectroscopy", Shoichi Yamaguchi and Tahei

Tahara, *7th Pacific Rim Conference on Lasers and Electro-Optics (CLEO-PR)*, August 2007, Seoul, South Korea. (Invited Lecture)

[13] "Novel Interface-Selective Even-Order Nonlinear Spectroscopy", Shoichi Yamaguchi and Tahei Tahara, *11th East Asian Workshop on Chemical Dynamics*, May 2007, Tokyo, Japan. (Invited Lecture)

[12] "Novel Even-Order Nonlinear Spectroscopy for Liquid Interfaces: Interface-Specific Hydrogen Bonds and Interfacial Polarity", Shoichi Yamaguchi, Sobhan Sen, and Tahei Tahara, *233rd ACS National Meeting*, March 2007, Chicago, USA.

[11] "Fourth-Order Coherent Raman Spectroscopy for Buried Interfaces", Shoichi Yamaguchi and Tahei Tahara, *20th International Conference on Raman Spectroscopy (ICORS)*, August 2006, Yokohama, Japan. (Invited Lecture)

[10] "Fourth-Order Coherent Vibrational Spectroscopy for Buried Interfaces", Shoichi Yamaguchi and Tahei Tahara, *International Workshop on Time-Resolved Spectroscopy*, August 2006, Wako, Japan.

[9] "Electronic $\chi^{(2)}$ Multiplex Sum Frequency Generation Spectroscopy of Dye Molecules at the Air/Water Interface", Shoichi Yamaguchi and Tahei Tahara, *Pacifichem 2005*, December 2005, Honolulu, USA.

[8] "Multiplex Electronic Sum Frequency Generation Spectroscopy of Dye Molecules at the Air/Water Interface", Shoichi Yamaguchi and Tahei Tahara, *Femtochemistry VII*, August 2005, Washington D. C., USA.

[7] "Precise Two-Photon Absorption Measurements of Biomolecules using Femtosecond Broadband Pulses", Shoichi Yamaguchi and Tahei Tahara, *226th ACS National Meeting*, September 2003, New York, USA.

[6] "Highly Sensitive Luminescence Measurement for Determination of Very Low Quantum Yield of Singlet Oxygen Formation Photosensitized by Dyes and Pigments", Shoichi Yamaguchi, Yutaka Sasaki, Kimiya Takeshita, Yukichi Murata, and Tetsuo Murayama, *International Conference on Imaging Science*, May 2002, Tokyo, Japan.

[5] "Effect of Electric Field and Adsorbed Water upon Primary Carrier-Generation Process in Titanyl Phthalocyanine", Shoichi Yamaguchi and Yutaka Sasaki, *Gordon Research Conference*, August 2000, New Port, Rhode Island, USA.

[4] "Effect of water on primary photocarrier-generation process in Y-form titanyl phthalocyanine", Shoichi Yamaguchi and Yutaka Sasaki, *SPIE's International Symposium on Optical Science and Technology*, July 2000, San Diego, USA.

[3] "Effect of Electric Field and Adsorbed Water upon Primary Carrier-Generation Process in Titanyl Phthalocyanine", Shoichi Yamaguchi, Yutaka Sasaki, Toyoshi Ohashi, and Tetsuo Murayama, *Japan Hardcopy 2000*, June 2000, Tokyo, Japan.

[2] "Femtosecond photophysics and photochemistry of retinal isomers", Shoichi Yamaguchi and Hiro-o Hamaguchi, *International Workshop on Femtosecond Technology*, February 1996, Tsukuba, Japan.
[1] "Picosecond dynamics of photoexcited transient species of p-phenylenes; population decay and structural change", Shoichi Yamaguchi and Hiro-o Hamaguchi, *XIVth International Conference on Raman Spectroscopy (ICORS)*, August 1994, Hong Kong.

Publications (in English)

[99] Ikumi Mori, Shun Terasaka, Shoichi Yamaguchi, and Takuhiro Otosu, "Diffusion of Multiple Species Resolved by Fluorescence Lifetime Recovery After Photobleaching (FLRAP)", *Anal. Chem.* **96** (2024) 4854-4859.
[98] Tetsuyuki Takayama, Takuhiro Otosu, and Shoichi Yamaguchi, "Theoretical and experimental OD-stretch vibrational spectroscopy of heavy water", *J. Chem. Phys.* **160** (2024) 104504.
[97] Kosei Shimizu, Miyuki Sakaguchi, Shoichi Yamaguchi, and Takuhiro Otosu, "Peripheral Adsorption of Polylysine on One Leaflet of a Lipid Bilayer Reduces the Lipid Diffusion of Both Leaflets", *Phys. Chem. Chem. Phys.* **26** (2024) 8873-8878.
[96] Korenobu Matsuzaki, Shoichi Yamaguchi, and Tahei Tahara, "Complex phase of the nonresonant background in sum frequency generation spectroscopy", *J. Chem. Phys.* **159** (2023) 224708.
[95] Shoichi Yamaguchi, Tetsuyuki Takayama, and Takuhiro Otosu, "Appraisal of TIP4P-type models at water surface", *J. Chem. Phys.* **159** (2023) 171101.
[94] Achintya Kundu, Shoichi Yamaguchi, and Tahei Tahara, "Local pH at nonionic and zwitterionic lipid/water interfaces revealed by heterodyne-detected electronic sum-frequency generation: A unified view to predict interfacial pH of biomembrane", *J. Phys. Chem. B.* **127** (2023) 5445-5452.
[93] Tetsuyuki Takayama, Takuhiro Otosu, and Shoichi Yamaguchi, "Transferability of vibrational spectroscopic map from TIP4P to TIP4P-like water models", *J. Chem. Phys.* **158** (2023) 136101.
[92] Shoichi Yamaguchi, Tetsuyuki Takayama, Yuki Goto, Takuhiro Otosu, and Takuma Yagasaki, "Experimental and theoretical heterodyne-detected sum frequency generation spectroscopy of isotopically pure and diluted water surfaces", *J. Phys. Chem. Lett.* **13** (2022) 9649-9653.
[91] Tetsuyuki Takayama, Kota Kishi, Takuhiro Otosu, Takuma Yagasaki, and Shoichi Yamaguchi, "Experimental and theoretical Raman spectroscopy of isotopically pure and diluted ice VI", *J. Phys. Chem. C* **126** (2022) 17359-17365.
[90] Senri Ishihara, Tetsuyuki Takayama, Miyuki Sakaguchi, Takuhiro Otosu, Takuma Yagasaki, Yoshiharu Suzuki, and Shoichi Yamaguchi, "Raman spectroscopy of isotopically pure and diluted high- and low-density amorphous ices", *J. Raman Spectrosc.* **53** (2022) 1773-1784.
[89] Shoichi Yamaguchi, Roumiana Tsenkova, and Hiro-o Hamaguchi, "Editorial on the special issue of JRS on Vibrational Spectroscopy of Water", *J. Raman Spectrosc.* **53** (2022) 1654-1655.
[88] Prashant C. Singh, Mohammed Ahmed, Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "DNA-Induced Reorganization of Water at Model Membrane Interfaces Investigated by Heterodyne-Detected Vibrational Sum Frequency Generation Spectroscopy", *J. Phys. Chem. B* **126** (2022) 840-846.

[87] Yuki Nojima and Shoichi Yamaguchi, "Heterodyne-detected sum frequency generation spectroscopic study of weakly hydrogen-bonded water at charged lipid interfaces, revisited", *J. Phys. Chem. C* **125** (2021) 23483-23489.
[86] Shoichi Yamaguchi and Takuhiro Otosu, "Progress in phase-sensitive sum frequency generation spectroscopy", *Phys. Chem. Chem. Phys.* **23** (2021) 18253-18267.
[85] Takuhiro Otosu and Shoichi Yamaguchi, "Leaflet-Specific Lipid Diffusion Revealed by Fluorescence Lifetime Correlation Analyses", *Chem. Lett.* **49** (2020) 1473-1480.
[84] Mohammed Ahmed, Satoshi Nihonyanagi, Achintya Kundu, Shoichi Yamaguchi, and Tahei Tahara, "Resolving the Controversy over Dipole versus Quadrupole Mechanism of Bend Vibration of Water in Vibrational Sum Frequency Generation Spectra", *J. Phys. Chem. Lett.* **11** (2020) 9123-9130.
[83] Anton Myalitsin, Sanat Ghosh, Shu-hei Urashima, Satoshi Nihonyanagi, Shoichi Yamaguchi, Takashi Aoki, and Tahei Tahara, "Structure of Water and Polymer at the Buried Polymer/Water Interface Unveiled by Heterodyne-Detected Vibrational Sum Frequency Generation", *Phys. Chem. Chem. Phys.* **22** (2020) 16527-16531.
[82] Mohammed Ahmed, Yuki Nojima, Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Comment on 'Phase-sensitive sum frequency vibrational spectroscopic study of air/water interfaces: H_2O, D_2O, and diluted isotopic mixtures' [J. Chem. Phys. 150, 144701 (2019)]", *J. Chem. Phys.* **152** (2020) 237101.
[81] Yuki Nojima, Yuki Shioya, Hajime Torii, and Shoichi Yamaguchi, "Hydrogen order at the surface of ice I_h revealed by vibrational spectroscopy", *Chem. Commun.* **56** (2020) 4563-4566.
[80] Takuhiro Otosu and Shoichi Yamaguchi, "Electrostatic attraction between lipid headgroups and a glass surface enhances the lipid diffusion in the proximal leaflet of a supported lipid bilayer", *Phys. Chem. Chem. Phys.* **22** (2020) 1242-1249.
[79] Korenobu Matsuzaki, Satoshi Nihonyanagi, Shoichi Yamaguchi, Takashi Nagata, and Tahei Tahara, "Quadrupolar mechanism for vibrational sum frequency generation at air/liquid interfaces: Theory and experiment", *J. Chem. Phys.* **151** (2019) 064701.
[78] Takuhiro Otosu and Shoichi Yamaguchi, "Reduction of glass-surface charge density slows the lipid diffusion in the proximal leaflet of a supported lipid bilayer", *J. Chem. Phys.* **151** (2019) 025102.
[77] Shoichi Yamaguchi, Yudai Suzuki, Yuki Nojima, and Takuhiro Otosu, "Perspective on sum frequency generation spectroscopy of ice surfaces and interfaces", *Chem. Phys.* **522** (2019) 199-210.
[76] Takuhiro Otosu and Shoichi Yamaguchi, "Two-Dimensional Fluorescence Lifetime Correlation Spectroscopy: Concepts and Applications", *Molecules* **23** (2018) 2972.
[75] Takuhiro Otosu and Shoichi Yamaguchi, "Quantifying the Diffusion of Lipids in the Proximal/Distal Leaflets of a Supported Lipid Bilayer by Two-Dimensional Fluorescence Lifetime Correlation Spectroscopy", *J. Phys. Chem. B* **122** (2018) 10315-10319.
[74] Takuhiro Otosu and Shoichi Yamaguchi, "Total Internal Reflection Two-Dimensional Fluorescence Lifetime Correlation Spectroscopy", *J. Phys. Chem. B* **122** (2018) 5758-5764.
[73] Andrew J. Traverso, Brett Hokr, Zhenhuan Yi, Luqi Yuan, Shoichi Yamaguchi, Marlan O. Scully, and Vladislav V. Yakovlev, "Two-photon infrared resonance can enhance coherent Raman scattering", *Phys. Rev. Lett.* **120** (2018) 063602.

[72] Takuhiro Otosu, Kaito Kobayashi, and Shoichi Yamaguchi, "Local pH at the surface of hen egg white lysozyme", *Chem. Phys. Lett.* **693** (2018) 165-169.
[71] Ken-ichi Inoue, Prashant Chandra Singh, Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Cooperative Hydrogen-Bond Dynamics at a Zwitterionic Lipid/Water Interface Revealed by 2D HD-VSFG Spectroscopy", *J. Phys. Chem. Lett.* **8** (2017) 5160-5165.
[70] Yuki Nojima, Yudai Suzuki, Misato Takahashi, and Shoichi Yamaguchi, "Proton Order toward the Surface of Ice I_h Revealed by Heterodyne-Detected Sum Frequency Generation Spectroscopy", *J. Phys. Chem. Lett.* **8** (2017) 5031-5034.
[69] Takuhiro Otosu and Shoichi Yamaguchi, "Development of standing evanescent-wave fluorescence correlation spectroscopy and its application to the lateral diffusion of lipids in a supported lipid bilayer", *J. Chem. Phys.* **147** (2017) 041101.
[68] Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Ultrafast dynamics at water interfaces studied by vibrational sum-frequency generation spectroscopy", *Chem. Rev.* **117** (2017) 10665-10693.
[67] Yudai Suzuki, Yuki Nojima, and Shoichi Yamaguchi, "Vibrational Coupling at the Topmost Surface of Water Revealed by Heterodyne-Detected Sum Frequency Generation Spectroscopy", *J. Phys. Chem. Lett.* **8** (2017) 1396-1401.
[66] Yuki Nojima, Yudai Suzuki, and Shoichi Yamaguchi, "Weakly Hydrogen-Bonded Water Inside Charged Lipid Monolayer Observed with Heterodyne-Detected Vibrational Sum Frequency Generation Spectroscopy", *J. Phys. Chem. C* **121** (2017) 2173-2180.
[65] Shoichi Yamaguchi, "Comment on 'Phase reference in phase-sensitive sum-frequency vibrational spectroscopy' [J. Chem. Phys. 144, 244711 (2016)]", *J. Chem. Phys.* **145** (2016) 167101.
[64] Prashant Chandra Singh, Ken-ichi Inoue, Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Femtosecond Hydrogen-Bond Dynamics of Bulk-like and Bound Water at Positively and Negatively Charged Lipid Interfaces Revealed by 2D HD-VSFG Spectroscopy", *Angew. Chem. Int. Ed.* **55** (2016) 10621-10625.
[63] Achintya Kundu, Tatsuya Ishiyama, Mohammed Ahmed, Shogo Tanaka, Ken-ichi Inoue, Satoshi Nihonyanagi, Hiromi Sawai, Shoichi Yamaguchi, Akihiro Morita, and Tahei Tahara, "Bend Vibration of Surface Water Investigated by Heterodyne-Detected Sum Frequency Generation and Theoretical Study: Dominant Role of Quadrupole", *J. Phys. Chem. Lett.* **7** (2016) 2597-2601
[62] Korenobu Matsuzaki, Ryoji Kusaka, Satoshi Nihonyanagi, Shoichi Yamaguchi, Takashi Nagata, and Tahei Tahara, "Partially Hydrated Electrons at the Air/Water Interface Observed by UV-Excited Time-Resolved Heterodyne-Detected Vibrational Sum Frequency Generation Spectroscopy", *J. Am. Chem. Soc.* **138** (2016) 7551-7557.
[61] Anton Myalitsin, Shu-hei Urashima, Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Water Structure at the Buried Silica/Aqueous Interface Studied by Heterodyne-Detected Vibrational Sum-Frequency Generation", *J. Phys. Chem. C* **120** (2016) 9357-9363.
[60] Ken-ichi Inoue, Tatsuya Ishiyama, Satoshi Nihonyanagi, Shoichi Yamaguchi, Akihiro Morita, and Tahei Tahara, "Efficient Spectral Diffusion at the Air/Water Interface Revealed by Femtosecond Time-Resolved Heterodyne-Detected Vibrational Sum Frequency Generation Spectroscopy", *J. Phys. Chem. Lett.* **7** (2016) 1811-1815.

[59] Satoshi Nihonyanagi, Ryoji Kusaka, Ken-ichi Inoue, Aniruddha Adhikari, Shoichi Yamaguchi, and Tahei Tahara, "Accurate determination of complex $\chi^{(2)}$ spectrum of the air/water interface", *J. Chem. Phys.* **143** (2015) 124707.
[58] Sudip Kumar Mondal, Ken-ichi Inoue, Shoichi Yamaguchi, and Tahei Tahara, "Anomalous Effective Polarity of an Air/Liquid-Mixture Interface: A Heterodyne-Detected Electronic and Vibrational Sum Frequency Generation Study", *Phys. Chem. Chem. Phys.* **17** (2015) 23720-23723.
[57] Shoichi Yamaguchi, "Development of single-channel heterodyne-detected sum frequency generation spectroscopy and its application to the water/vapor interface", *J. Chem. Phys.* **143** (2015) 034202.
[56] Shoichi Yamaguchi and Tahei Tahara, "Development of Electronic Sum Frequency Generation Spectroscopies and their Application to Liquid Interfaces", *J. Phys. Chem. C* **119** (2015) 14815-14828.
[55] Ken-ichi Inoue, Satoshi Nihonyanagi, Prashant Chandra Singh, Shoichi Yamaguchi, and Tahei Tahara, "2D Heterodyne-Detected Sum Frequency Generation Study on Ultrafast Vibrational Dynamics of H_2O and HOD Water at Charged Interfaces", *J. Chem. Phys.* **142** (2015) 212431.
[54] Prashant Chandra Singh, Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Interfacial water in the vicinity of a positively charged interface studied by steady-state and time-resolved heterodyne-detected vibrational sum frequency generation", *J. Chem. Phys.* **141** (2014) 18C527.
[53] Satoshi Nihonyanagi, Shoichi Yamaguchi, and Tahei Tahara, "Role of Hydrogen Bonding on the Mechanisms of Hofmeister Series", *J. Am. Chem. Soc.* **136** (2014) 6155-6158.
[52] Achintya Kundu, Shoichi Yamaguchi, and Tahei Tahara, "Evaluation of pH at Charged Lipid/Water Interfaces by Heterodyne-Detected Electronic Sum Frequency Generation", *J. Phys. Chem. Lett.* **5** (2014) 762-766.
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[50] Korenobu Matsuzaki, Satoshi Nihonyanagi, Shoichi Yamaguchi, Takashi Nagata, and Tahei Tahara, "Vibrational sum frequency generation by the quadrupolar mechanism at the nonpolar benzene/air interface", *J. Phys. Chem. Lett.* **4** (2013) 1654-1658.
[49] Achintya Kundu, Hidekazu Watanabe, Shoichi Yamaguchi, and Tahei Tahara, "Agreement between experimentally and theoretically estimated orientational distributions of solutes at the air/water interface", *J. Phys. Chem. C.* **117** (2013) 8887-8891.
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[46] Shoichi Yamaguchi, Achintya Kundu, Pratik Sen, and Tahei Tahara, "Quantitative estimate of the water surface pH using heterodyne-detected electronic sum frequency generation", *J. Chem. Phys.*

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