

Martin T. Zanni

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Biosketch:

Martin T. Zanni is the Meloche-Bascom Professor of Chemistry at the University of Wisconsin-Madison. He received his PhD from the University of California-Berkeley, working with Dan Neumark, and was an NIH Postdoctoral Fellow at the University of Pennsylvania with Robin Hochstrasser. He is one of the early innovators of 2D IR spectroscopy and has made many technological innovations in 2D IR, 2D Visible, and 2D SFG spectroscopy that has broadened the capabilities and scope of multidimensional spectroscopies. He utilizes these new techniques to study topics in biophysics, chemical physics, photovoltaics, and surface science. He has received many national and international accolades for his research, including the Research Initiatives Award from the National Academy of Sciences for his work in optics, the Raymond and Beverly Sackler Prize from Tel Aviv University for his work in multidimensional spectroscopy, and the Early Career Scholar Award from the NIH/NIDDK for his work on Type 2 diabetes. He founded PhaseTech Spectroscopy Inc., which is the first company to commercialize 2D IR and 2D Visible spectroscopies.

Date of Birth: February 28, 1972; Portland, OR

Education: *B.S.*, Chemistry (highest honors), University of Rochester, 1994
B.A., Physics (highest honors), University of Rochester, 1994
Ph.D., Chemistry, University of California at Berkeley, 1999
Advisor: Daniel M. Neumark
Postdoctoral, Chemistry, University of Pennsylvania, 1/2000-6/2002
Advisor: Robin M. Hochstrasser

Appointments: Meloche-Bascom Professor (7/2010 –)
Department of Chemistry, University of Wisconsin, Madison, WI
Meloche-Bascom Associate Professor (7/2008 – 6/2010)
Department of Chemistry, University of Wisconsin, Madison, WI
Meloche-Bascom Assistant Professor (10/2007 – 6/2008)
Department of Chemistry, University of Wisconsin, Madison, WI
Assistant Professor (7/2002 – 10/2007)
Department of Chemistry, University of Wisconsin, Madison, WI
NIH Postdoctoral Fellow (1/2000-6/2002) with Robin M. Hochstrasser
Department of Chemistry, University of Pennsylvania, Philadelphia, PA

Awards: Craver Award, 2017
Vilas Associate Award, UW-Madison, 2015
Raymond and Beverly Sackler International Prize in the Physical Sciences, 2011
Research Initiatives Award, National Academy of Sciences 2011
H.I. Romnes Faculty Fellowship, UW-Madison, 2011
Fellow of the American Physical Society, 2010
NIH/NIDDK 60th Anniversary Early Career Investigator/Scholar Award, 2010
American Chemical Society Nobel Laureate Signature Award for
Graduate Education in Chemistry, 2010 (as mentor)
Presidential Early Career Award for Scientists and Engineers, 2009
Coblentz Award, 2006
Alfred P. Sloan Research Fellow, 2006

Packard Foundation Science and Engineering Fellowship, 2005
Benjamin Smith Reynolds Award for Excellence in Teaching Engineers, 2005
Beckman Young Investigators Award, 2004
UW-Madison Honored Instructor, 2003/04/05
National Science Foundation CAREER Award, 2003
Research Corporation Innovation Award, 2002
Camille and Henry Dreyfus New Faculty Award, 2002
American Chemical Society Nobel Laureate Signature Award for
Graduate Education in Chemistry, 2001 (as student)
National Institute of Health Postdoctoral Fellow (NRSA), 2000
American Chemical Society Regional Award, Rochester, NY, 1994
Bausch and Lomb Scholar, University of Rochester, 1990

Named Lectures, Plenary Talks, and Special Invitations

Keynote Talk, European Conference of Spectroscopy of Biological Molecules (ECSBM),
Amsterdam, Sept. 2017
Plenary Talk, SciX, Reno, NV, Oct. 2017
Distinguished Physical Chemistry Lecturer, Univ of Nevada, Reno, Oct. 2016
Noyes Lecturer, University of Texas, Austin, March 2016.
Student Invited Seminar, University of Minnesota, 2016.
Plenary Talk, Dutch Biophysics Meeting, De Koningshof, The Netherlands, Sept 2015
Keynote Talk, IUPAC, Korea, August 2015 (declined)
Plenary Talk, 8th International Conference on Advanced Vibrational Spectroscopy (ICAVS-8), July 2015
Student Invited Lecturer, Carleton College, April 2015
Special Invited Talk, 60th Anniversary of Coblenz Society, Pittcon, New Orleans, March 2015
Plenary Talk, Advances in Structure and Dynamics, Bangalore, India, January 2015
Harry Kroto Lecture in Chemical Physics, Florida State University, 2014
Plenary Talk, European Conference of Spectroscopy of Biological Molecules (ECSBM), Oxford, Aug. 2013
Plenary Talk, Nanoscience Days, University of Jyväskylä, Finland, Oct. 2012.
Plenary Talk and Student Invited Seminar, Biophysical Symposium, University of Michigan, April 2012.
Plenary Talk, Australian Society of Biophysics and Physical Chemical Division of the Royal Australian
Chemical Institute, Wollongong, Australia, Dec. 2011.
Student Invited Seminar, Modern Optics and Spectroscopy, MIT, Oct. 2011.
Plenary Talk, EPL Celebratory Meeting, Munich, May 2011.
Plenary Talk, Spectroscopic Society of Japan, Kyoto, Nov. 2010.
Plenary Talk, EUCMOS, Florence, Italy, Aug. 2010.
Plenary Talk, Ultrafast Phenomena, Italy, June 2008.
Special Lecturer, NSF/NIH Workshop on Instrument Development, D.C., June 2008.
Plenary Talk, US North Africa Regional Workshop on Nanostructured Materials and Nanotechnology, Tunis,
Tunisia, March. 2008.
Special Lecturer, Summer Lecture Series, University of Wyoming, Laramie, Wyoming, July 2005.
Student Invited Seminar, Joint Theoretical Chemistry Lecture Series, Harvard/MIT/Boston U., Boston, MA,
April 2005.

Invited Presentations and Seminars since tenure in 2008 (>150 invited talks total)

2018

Zernike Institute Colloquia, University of Groningen, The Netherlands, Feb. 2018
Coherent Multidimensional Spectroscopy (CMDS), Seoul, Korea, Jun. 2018

2017

Pennsylvania State University, State College, Feb. 2017
American Physical Society, New Orleans, Mar. 2017
American Chemical Society, San Francisco, Apr. 2017
Genentech, South San Francisco, Apr. 2017
CLEO, San Jose, Tutorial Talk, May 2017

Eli Lilly, Indianapolis, IN Jun. 2017
Time-resolved Vibrational Spectroscopy (TRVS), Cambridge, UK, Jul. 2017
EPFL, Lausanne Oct. 2017
Stanford University, CA Nov. 2017
Advancing Analytics for Biotechnology Products (Federal Drug Administration),
Gathersburg MD, Nov. 2017
Zurich University, Zurich, Switzerland, Dec. 2017

2016

GRC Protein Folding, Galveston, TX Jan. 2016
University of Texas at Austin, TX, Mar. 2016.
University of California, Berkeley, CA Feb. 2016.
New York University, New York, Feb. 2016.
Cornell (Biochemistry), New York, Feb. 2016.
University of Minnesota, Minn., Apr. 2016
Rice University, TX, Jun 2016
American Chemical Society, San Diego, Aug. 2016
Coherent Multidimensional Spectroscopy (CMDS), Groningen, The Netherlands, June 2016
University of Utah, Salt Lake City, Oct. 2016
University of Georgia, GA, Oct. 2016
MIT, Mass., Nov. 2016

2015

Pacifichem, American Chemical Society (three talks), Hawaii, Dec. 2015
Rice University, Houston, Texas Oct. 2015
Notre Dame, South Bend, Indiana, Nov. 2015
American Chemical Society, Boston, August 2015
Workshop on Nanotube Optics and Nanospectroscopy (WONTON), Bavaria, June 2015
Stanford University, Palo Alto, May 2015
American Chemical Society, Denver, March 2015
Johns Hopkins, Baltimore, February 2015
Tata Institute of Fundamental Research (TIFR), Mumbai, India, January 2015
Faraday Discussion, Bangalore, India, January 2015

2014

Workshop on Light Driven Processes in Bio-Inspired Materials, Rice Univ., Dec. 2014
University of Chicago, Molecular Engineering, November 2014
University of Delaware, Delaware, October 2014
University of Illinois, Urbana-Champaign, Sept 2014
SPIE Nanoscience and Engineering Conference, San Diego, August 2014
Coherent Multidimensional Spectroscopy, Eugene, July 2014
Ultrafast Phenomena, Japan, July 2014
Nonlinear Optics at Interfaces, Telluride, June 2014
American Chemical Society, Dallas, March 2014
Northwestern, March 2014
UC-Santa Barbara, March 2014
Indiana University, Feb. 2014

2013

Eastern Analytical Society Meeting, NJ Nov. 2013
University of Pennsylvania, Biophysics, Sept. 2013
FACSS, Milwaukee, WI Oct. 2013
Protein Dynamics Workshop, Telluride, CO Aug. 2013
Vibrational Dynamics Workshop, Telluride CO July 2013
American Chemical Society, Indianapolis, August 2013
Transient Raman Vibrational Spectroscopy (TRVS), Japan, May 2013
American Chemical Society, New Orleans, April 2013
Ohio State University, March 2013

American Physical Society, Baltimore, March 2013
Caltech, Jan. 2013
Physics of Quantum Electronics, Utah, Jan. 2013

2012

SUNY Stony Brook, Nov. 2012
Rockford College, Rockford Illinois, Oct. 2012
University of North Carolina, Sept. 2012.
Rice University, Sept. 2012.
ACS, Philadelphia, August, 2012
CMD5, Berlin, July 2012.
Interfaces, Telluride, June 2012.
University of Houston, April 2012.
ACS, San Diego, Mar. 2012.
APS, Boston, Feb. 2012
Temple University, Feb. 2012.
Howard University, Jan. 2012

2011

Georgia Tech, Department of Chemistry, Nov. 2011.
University of Chicago, Oct. 2011.
Emory University, Oct. 2011.
Yale University, Department of Chemistry, Sept. 2011.
GRC Quantum Control, Mt. Holyoke, MA, July 2011.
TRVS, Switzerland, June 2011.
American Chemical Society, Anaheim, Mar. 2011.
Pittcon, Atlanta, Mar. 2011.
McGill University, Canada, Feb. 2011.
University of California, Irvine, Jan. 2011.

2010

Pacificchem, ACS, Hawaii, Dec. 2010.
APS Laser Science Meeting, Rochester, NY, Oct. 2010.
CMD5, Minneapolis, MN, Aug. 2010.
Ultrafast Phenomena, July 2010.
Chautauqua on Nonlinear Optics, Purdue, June. 2010.
Intern. Conf. on Ultrafast Struc. Dyn., Lausanne, Switzerland, Jun. 2010.
University of Washington, Seattle, May 2010.
UW-Madison, Chem. E., Mar. 2010.
Pittcon, Orlando, FL, Mar. 2010
Western Spectroscopy Association, Asilomar, CA, Feb.2010.
Northwestern, Jan. 2010

2009

Princeton University, New Jersey, Oct. 2009.
American Chemical Society, Washington D.C., August 2009.
TRVS, New Hampshire, May 2009.
University of Zurich, Switzerland, Apr. 2009.
University of Groningen, Netherlands, Apr. 2009.
Hebrew University and Weizmann Institute, Israel, March 2009.

2008

Max Planck Institute, Berlin, Dec. 2008
American Chemical Society Meeting, Philadelphia, PA, Aug. 2008.
Vibrational Spectroscopy Gordon Conference, Massachusetts, Aug. 2008
Coherent Multidimensional Spectroscopy, Kyoto, Japan, Aug. 2008
Optical Society of America, San Jose, CA, May 2008.
American Chemical Society Meeting, New Orleans, Apr. 2008.
University of Chicago at Illinois, Il, Apr. 2008.
American Physical Society, New Orleans, March 2008.

Michigan State University, East Lansing, MI, Feb. 2008.

University of Minnesota, Minneapolis, MN, Jan. 2008.

2007

40 invited talks and seminars prior to 2008.

Patents: US Patent 7,771,938 Nonlinear spectroscopic methods for identifying and characterizing molecular interactions.

US Patent 7,760,342. Multidimensional Spectrometer.

US Patent 9,568,366. Multidimensional Spectrometer.

US Patent Pending. Multidimensional White Light Spectrometer.

Departmental and University Committees:	2005-08,12	Graduate Admissions Committee
	2005-2011	Awards Committee
	2005-2016	Shops Committee
	2005-2008	Faculty Senator
	2006	University Orientation & New Student Programs Advisory Committee
	2007	Website Committee
	2009, 2016	Graduate Student Faculty Liaison Committee
	2009	Safety Committee
	2009-2011	Graduate School Research Committee
	2009-2011	Faculty Search Committee
	2012-2013	Chemical Biology Division Steering Committee
	2013	Seminar Coordinator
2013-2016	Department Finance and Rooms Committee	

Professional Activities: Senior Editor, Journal of Physical Chemistry, 2011-

Journal Editorial Advisory Boards
Journal of Physical Chemistry (Jan. 2010 – Dec. 2012).
Journal of Chemical Physics (Jan. 2010 – Dec. 2012).
Chemical Reviews (Oct. 2015 – current).

Founder and President of PhaseTech Spectroscopy, Inc.
Startup company devoted to commercializing multi-dimensional spectroscopies.

Symposium/Conference organizer
Frontiers in Biophysical Methods, Amer. Chem. Soc., NY Sept. 2003.
Vibrational Dynamics of Biomolecular Systems, Amer. Chem. Soc., Chicago, IL March, 2007.
Gas and condensed phase spectroscopy of biomolecules, Amer. Chem. Soc., Spring 2011.
Transient Raman and Vibrational Spectroscopy (TRVS), Madison WI 2015.

Conference Program Committees:
Coherent Multidimensional Spectroscopy (CMDS), (2008-present).
Conference on Time-resolved Raman and Vibrational Spectroscopy (TRVS), (2008-present)
International Conference on Ultrafast Phenomena (2010-2012, 2014)

Committees
Chair of the Biophysical Subdivision of the American Chemical Society Physical Chemistry Section (2007 – 2010)

Chair-Elect/Chair, ACS Wisconsin Section (2010-2014)
Alternate Counselor, ACS Wisconsin Section, (2014-2015)

Federal Agency Workshops and Study Sections

DOE Workshop. Carbon Capture: Beyond 2020, March 2010
NSF/NIH Instrumentation Workshop, 2008.
NSF Review Panels (confidential dates)
NIH Ad Hoc Study Section, MSFA, 2010; MSFB 2015, 2016. BBM 2016.
NIDDK 2017.
NIH MSFB, Standing Member, Oct. 2018- (If nomination approved).

Co-chair, MRSEC Super-SEED, UW-Madison, "Active nanomembranes and their surfaces."

Consultant for Imago Scientific Instruments, Madison, WI. (2003 – 2005).

Member of the McPherson Eye Research Institute, University of Wisconsin.

Faculty educator

Biology Interest Groups (BIGs), Center for Biology Education, a National Science Foundation funded teaching consortium at the University of Wisconsin-Madison.
Volunteer at local elementary school Science Night by performing a series of chemistry demonstrations and activities (Wingra School since 2012 to present).
Classroom lecturer at Whitehorse Middle School (2017) and Thoreau Elementary School (2017).
"Career Day" presenter at Thoreau Elementary School, 2017
WARF Discovery Challenge, Judge, 2015.

ACS (anonymous) and APS Prize Selection Committees

Reviewer and referee for the National Institutes of Health, National Science Foundation, Department of Energy, Research Corporation, ACS Petroleum Research Fund, J. Chem. Phys., J. Phys. Chem., Chem. Phys. Lett., ChemPhysChem, J. Amer. Chem. Soc., Biochemistry, Biopolymers, Proc. Natl. Acad. Sci., Accounts of Chem. Res., Optics Letters, JOSA B, Vibrational Spec., Applied Spec., Nature, Nature Chemistry, Science, Nanoletters, and others.

Graduate Students:

Eric Fulmer, Ph.D. 2006 (Science consultant in DC)
Terry Ding, Ph.D. 2007
Amber Krummel, Ph.D. 2007 (Faculty at Colorado State)
Prabuddha Mukherjee, Ph.D. 2008 (Research Scientist at UIUC) (Awarded divisional prize for the top student from the pchem division upon graduation).
Sang-Hee Shim, Ph.D. 2008 (Faculty at Korean University) (Received Nobel Laureate Signature Award from the ACS for the "top" Ph.D. dissertation in the USA in chemistry in 2008).
David Strasfeld, Ph.D. 2009 (Lumicell Diagnostics) (Received Casey Award for the top pchem student)
Yun Ling, Ph.D. 2010
Ann Woys, Ph.D. 2012 (Genen Tech, SF)
Wei Xiong, Ph.D. 2011 (Faculty at UCSD)
Emily Blanco, 11/07–5/13 (Research Fellow at the NIH)
Sudipta Mukherjee, 11/07–6/13 (Postdoc at UC Irvine)
Jennifer Laaser, 11/08 –8/13 (Faculty at Univ. of Pittsburgh) (Received Casey Award for the top pchem student; Received the L'Oreal Postdoctoral Fellowship)
Lauren Buchanan, 11/08 –9/13 (Faculty at Vanderbilt)

Dong Gyun Ha, 11/08 – 5/14
 David Skoff, 11/09 – 11/14 (Received the Reddy Award for the top pchem student).
 Huong Tran, 11/10 – 10/16 (Postdoc at Stanford)
 Randy Mehlenbacher, 11/10 – 1/16 (Postdoc at Stanford. Received the Reddy Award for the top experimentalist in the pchem division.)
 Tianqi Zhang, 11/11 – 10/16(?) (Intel, Inc. Portland)
 Tracey Oudenhoven, 11/12 – 9/15 (Teacher in Madison)
 Jia-Jung Ho, 11/12 –
 Tom McDonough, 11/12 – 6/17 (Intel, Inc. Portland)
 Nick Kearns, 11/13 –
 Kacie Rich, 11/13 –
 Josh Ostrander, 11/14 –
 Ariel Alperstein, 11/14 –
 Kaarin Evens, 11/15 –
 Jessi Flach, 11/15 –
 Megan Petti, 11/16 –

Postdoctoral Researchers and Scientists Scientist Dr. Chris Middleton, Ph.D., 7/2008 (Founder of PhaseTech, Inc.)
 Postdoc Dr. Sean Moran, Ph.D., 2/2009 – 12/2013 (Faculty at Southern Illinois Univ.)
 Postdoc Dr. Maxim Grechko, Ph.D., 2/2011 – 3/2014 (Max Planck Institute, Mainz)
 Postdoc Dr. Arnaldo Serrano, Ph.D., 3/2013 – 1/2016 (Faculty at Notre Dame)
 Postdoc Dr. Ayanjeet Ghosh, 1/2014 – 3/2016 (Postdoc at UIUC)
 Postdoc Dr. Andrew Jones, 1/2016 –
 Postdoc Dr. Michal Maj, 2/2016 –
 Postdoc Justin Lomont, 5/2016 –

Undergraduate Students: Sam Bockenbauer (1/04-8/05), Krysten Dorman (1/04-6/04), Erik Harrington (1/03-5/03), Jennifer Cedzo (8/04-5/05), Kristin Jansen (8/04- 5/05), Tom Garvey (10/05-4/06), John Manzuk(12/05-12/07), Valentine van Wouterghem (10/06-4/07), Steve Schmitt (3/07-9/07), Erin Conrad (4/07-4/09), Kelvin Sutton (REU from Howard Univ., 6/10-8/10), Emily Saunders (REU from Howard University, 6/11-8/11), Igor Luzhansky (1/12-7/12), Wenting Cai (1/10-5/13), Len Roche (6/11-5/13), Chase Bruggeman (5/13-12/13), Elliot Eklund (9/13-8/16), Alex Blair (9/14-9/15), Sean Phillips (1/16-4/16), Hunter Tenor (1/16-), Isabella Tigges-Green (1/17-), Dan Mark (1/17-).

Book

Peter Hamm and Martin Zanni, “Concepts and Methods in 2D IR spectroscopy,” Cambridge University Press, Cambridge, 2011. Sold 600 copies in <2 years. Pirated version now available online.

Book Chapters

1. Peter Hamm and Martin T. Zanni, “Ultrafast two-dimensional infrared spectroscopy of proteins,” *Encyclopedia of Biophysics*, 2013.
2. Lauren E. Buchanan, Emily B. Dunkelberger, Martin T. Zanni, “Examining amyloid structure and kinetics with 1D and 2D infrared spectroscopy and isotope labeling,” in *Protein Folding and Misfolding: Shining Light by Infrared Spectroscopy*, Edited by Heinz Fabian and Dieter Naumann, Springer 2012.
3. David R. Skoff and Martin T. Zanni, “Protein dynamics studied with 1D and 2D IR spectroscopy,” in *Encyclopedia of Biophysics*.
4. Tianqi O. Zhang, Maksim Grechko, Sean D. Moran, and Martin T. Zanni, “Isotope-labeling Amyloids via Synthesis, Expression, and Chemical Ligation for Use in FTIR, 2D IR, and NMR Studies,” *Methods in Molecular Biology*, Humana Press, Edited by David Eliezer, 2016, pp.21-44.
5. Serrano, A.; Tu, L.-H.; Raleigh, D.; Zanni, M.: 2D IR spectroscopy reveals a beta-sheet intermediate that dictates the fiber formation of hIAPP. In *PROTEIN SCIENCE*; WILEY-BLACKWELL 111 RIVER ST, HOBOKEN 07030-5774, NJ USA, 2015; Vol. 24; pp 83-83.

Videos and News Stories

1. Wisconsin Public Radio, Wisconsin Life Series (<http://wilife.tumblr.com/post/16595889631/going-molecular-on-a-u-w-campus-a-chemistry>)
2. University Home Page Video (<http://m.wisc.edu/video/>)
3. Interview for "Celebrating 30 years of spectroscopy. Analysis of the State of the Art: IR Spectroscopy," 2 Spectroscopy 30(6) June 2.

Publications: (>8000 citations, H-index=50, >700 citations in 2016)

Our work was highlighted in C&E News in 2009 (twice), 2012 (twice), 2013 (Lead Story), 2014, 2016 (Featured Article), Spectroscopy Magazine in 2013 and 2017, and Physics Today in 2013. Other notable citations are below.

137. Zhang TO, Alperstein AM, Zanni MT, "Amyloid β -Sheet Secondary Structure Identified in UV-Induced Cataracts of Porcine Lenses using 2D IR Spectroscopy," J. Mol. Biol., 429, 1705 (2017)

136. Kratochvil, Huong; Maj, Michał; Matulef, Kimberly; Annen, Alvin; Ostmeier, Jared; Perozo, Eduardo; Roux, Benoît; Valiyaveetil, Francis; Zanni, Martin, "Probing the effects of gating on the ion occupancy of the K⁺ channel selectivity filter using 2D IR spectroscopy", JACS, 139, 8837 (2017)

*** Selected for JACS Spotlight and Cover.**

135. Nicholas M. Kearns, Randy D. Mehlenbacher, Andrew C. Jones, and Martin T. Zanni, "Broadband 2D electronic spectrometer using white light and pulse shaping: noise and signal evaluation at 1 and 100 kHz", Optics Express, 25, 7869 (2017).

134. "Triplet Exciton Dissociation and Electron Extraction in Graphene-Templated Pentacene Observed with Ultrafast Spectroscopy," Physical Chemistry Chemical Physics, 19, 4809 (2017)

133. Wang, Jialiang; Shea, Matthew; Flach, Jessica; McDonough, Thomas; Way, Austin; Zanni, Martin; Arnold, Michael, "The Role of Defects as Exciton Quenching Sites in Carbon Nanotube Photovoltaics" JPCC, 121, 8310 (2017).

132. Samuel H. Schneider, Huong T. Kratochvil, Martin T. Zanni, Steven G. Boxer, "Solvent Independent Anharmonicity for Carbonyl Oscillators" JPCA, In Press.

131. Joshua S. Ostrander, Robert Knepper, Alexander S. Tappan, Jeffrey J Kay, Martin T. Zanni, and Darcie A. Farrow, "Energy Transfer Between Coherently Delocalized States in Thin Films of the Explosive Pentaerythritol Tetranitrate, (PETN) Revealed by Two-Dimensional Infrared Spectroscopy," J. Phys. Chem. B, (2016), In Press (ASAP).

130. Ayanjeet Ghosh, Joshua S. Ostrander, and Martin T. Zanni, Watching Proteins Wiggle: Mapping Structures with Two-Dimensional Infrared Spectroscopy Chemical Reviews, Article ASAP DOI: 10.1021/acs.chemrev.6b00582

129. Yano, Y., Kondo, K., Watanabe, Y., Zhang, T. O., Ho, J.-J., Oishi, S., Fujii, N., Zanni, M. T. and Matsuzaki, K. (2017), GXXXG-Mediated Parallel and Antiparallel Dimerization of Transmembrane Helices and Its Inhibition by Cholesterol: Single-Pair FRET and 2D IR Studies. Angew. Chem.. doi:10.1002/ange.201609708
****Very important paper.****

128. Huong T. Kratochvil, Joshua K. Carr, Kimberly Matulef, Alvin W. Annen, Hui Li, Michał Maj, Jared Ostmeier, Arnaldo L. Serrano, H. Raghuraman, Sean D. Moran, J. L. Skinner, Eduardo Perozo, Benoît Roux, Francis I. Valiyaveetil, Martin T. Zanni, Instantaneous ion configurations in the K⁺ ion channel selectivity filter revealed by 2D IR spectroscopy, Science, *Science*, 353, 1040 (2016).

***C&E News Highlight**

127. R.D. Mehlenbacher, T. J. McDonough, N. M. Kearns, M. J. Shea, Y. Joo, P. Gopalan, M.S. Arnold, and M.T. Zanni, Polarization-Controlled Two-Dimensional White-Light Spectroscopy of Semiconducting Carbon Nanotube Thin Films, *J. Phys. Chem. C*, 2016, 120, 17069.
126. Joshua S. Ostrander, Arnaldo L. Serrano, Ayanjeet Ghosh, and Martin T. Zanni, Spatially Resolved Two-Dimensional Infrared Spectroscopy via Wide-Field Microscopy, *ACS Photonics*, 2016, 3, 1315.
125. Abedini, A.; Plesner, A.; Cao, P.; Ridgway, Z.; Zhang, J.; Tu, L. H.; Middleton, C. T.; Chao, B.; Sartori, D. J.; Meng, F.; Wang, H.; Wong, A. G.; Zanni, M. T.; Verchere, C. B.; Raleigh, D. P.; Schmidt, A. M.: Time-resolved studies define the nature of toxic IAPP intermediates, providing insight for anti-amyloidosis therapeutics. *eLife* **2016**, 5. <http://dx.doi.org/10.7554/eLife.12977>
124. Mehlenbacher, R., Wang, J.; Kearns, N.; Shea, M.; Flach, J.; McDonough, T.; Wu, M.-Y.; Arnold, M.; Zanni, M. "Ultrafast Exciton Hopping Observed in Bare Semiconducting Carbon Nanotube Thin Films With 2DWL Spectroscopy", *JPC Lett*, 2016, 7, 2024.
123. Commentary: Zanni, M. T, "Two-dimensional infrared spectroscopy measures the structural dynamics of a self-assembled film only one molecule thick," *PNAS*, 113, 4890, 2016.
122. Roy, S.; Skoff, D.; Perroni, D. V.; Mondal, J.; Yethiraj, A.; Mahanthappa, M.; Zanni, M.; Skinner, J. L.: "Water Dynamics in Gyroid Phases of Self-Assembled Gemini Surfactants." *JACS*, 138, 2472, 2016.
121. Ghosh, A.; Serrano, A. L.; Oudenhoven, T. A.; Ostrander, J. S.; Eklund, E. C.; Blair, A. F.; Zanni, M. T.: "Experimental implementations of 2D IR spectroscopy through a horizontal pulse shaper design and a focal plane array detector." *Optics letters* 2016, 41, 524-527.
120. Chan GKL, Witkowski A, Gantz DL, Zhang TO, Zanni MT, Jayaraman S, Cavigliolo G, "Myeloperoxidase-mediated Methionine Oxidation Promotes an Amyloidogenic Outcome for Apolipoprotein A-I," *Journal of Biological Chemistry*, 290, 10958-10971 (2015)
119. Dunkelberger, E. B.; Grechko, M.; Zanni, M. T.: Transition Dipoles from 1D and 2D Infrared Spectroscopy Help Reveal the Secondary Structures of Proteins: Application to Amyloids. *The Journal of Physical Chemistry B* 2015, 119, 14065-14075.
118. Zhang, T. O.; Grechko, M.; Moran, S. D.; Zanni, M. T.: Isotope-Labeled Amyloids via Synthesis, Expression, and Chemical Ligation for Use in FTIR, 2D IR, and NMR Studies. *Protein Amyloid Aggregation: Methods and Protocols* 2016, 21-41.
117. Serrano, Arnaldo L.; Ghosh, Ayanjeet; Ostrander, Joshua S.; Zanni, Martin T. "Wide-field FTIR microscopy using mid-IR pulse shaping," *Optics Express*, 23, 17815 (2015)
116. Ho, Jia-Jung, Skoff, David R., Ghosh, Ayanjeet, Zanni Martin T. "Structural Characterization of Single-Stranded DNA Monolayers Using Two-Dimensional Sum Frequency Generation Spectroscopy," *J. Phys. Chem. B*, 119 10586 (2015)
115. Kratochvil HT, Ha DG, and Zanni MT, "Counting tagged molecules one by one: Quantitative photoactivation and bleaching of photoactivatable fluorophores," *J. Chem. Phys.* 143, 104201 (2015).
114. Tracey A. Oudenhoven, Yongho Joo, Jennifer E. Laaser, Padma Gopalan, and Martin T. Zanni, "Dye aggregation identified by vibrational coupling using 2D IR spectroscopy," *J. Chem. Phys.*, 142, 212449 (2015)

113. Bei Ding, Afra Panahi, Jia-Jung Ho, Jennifer E. Laaser, Charles L. Brooks, III, Martin T. Zanni, Zhan Chen, "Probing Site-specific Structural Information of Peptides at Model Membrane Interface in Situ," *JACS*, 137, 10190 (2015).
112. Ayanjeet Ghosh, Jia-Jung Ho, Arnaldo L. Serrano, David R. Skoff, Tianqi Zhang and Martin T. Zanni Journal Article, *Faraday Discuss.*, Two-dimensional sum-frequency generation (2D SFG) spectroscopy: summary of principles and its application to amyloid fiber monolayers, *Faraday Discussions*, 2015, **177**, 493.
111. Randy D. Mehlenbacher, Thomas J. McDonough, Maksim Grechko, Meng-Yin Wu, Michael S. Arnold, Martin T. Zanni, Energy Transfer Pathways in Semiconducting Carbon Nanotubes Revealed using Two Dimensional White-Light Spectroscopy, *Nature Communications*, 6, 6732 (2015).
110. Shea MJ, Mehlenbacher RD, Zanni MT, Arnold MS. 2014. Experimental Measurement of the Binding Configuration and Coverage of Chirality-sorting Polyfluorenes on Carbon Nanotubes. *J. Phys. Chem. Lett.* 5, 3742 (2014)
109. Zhang TO, Buchanan LE, Zanni MT. Insights into amylin aggregation by 2D IR spectroscopy. *Biomedical Spectroscopy and Imaging*. 3(3):189-196 (2014)
108. Ghosh A, Wang J, Moroz YS, Korendovych IV, Zanni M, DeGrado WF, Gai F, Hochstrasser RM. 2D IR spectroscopy reveals the role of water in the binding of channel-blocking drugs to the influenza M2 channel. *The Journal of Chemical Physics*. 140(23):235105 (2014)
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