**MARCOS DANTUS – Curriculum Vitae** (Updated 2/10/2026)

## CONTACT INFORMATION

Professor Marcos Dantus
University Distinguished Professor
MSU Foundation Research Professor

Department of Chemistry
Department of Electrical and Computer Engineering
Department of Physics and Astronomy

578 South Shaw Lane Room 58
Michigan State University
East Lansing, MI 48824

Phone: (517) 353-1191
Email: dantus@msu.edu
Web: www2.chemistry.msu.edu/faculty/dantus/

**Personal information:** Born in Mexico; U.S. citizen.

## CURRENT POSITIONS AND AFFILIATIONS

- Professor, Department of Electrical and Computer Engineering, Michigan State University (2024–present)
- MSU Foundation Professor, Michigan State University (2015–present)
- University Distinguished Professor, Michigan State University (2015–present)
- Adjunct Professor, Department of Physics and Astronomy, Michigan State University (2002–present)
- Professor, Department of Chemistry, Michigan State University (2002–present)

## BRIEF RESEARCH OVERVIEW

Experimental chemical physicist working at the interface of ultrafast laser science, strong-field dynamics, and adaptive pulse shaping. My research focuses on how intense, shaped femtosecond laser fields accelerate electrons and drive the earliest stages of ionization, charge migration, and structural change in complex molecules, materials, and condensed phases. By accessing regimes where field-accelerated electron impact and recollision, rather than simple multiphoton absorption, govern the response, my group maps and controls cascaded ionization and fragmentation pathways and connects early-time electron dynamics to observables ranging from time-resolved mass spectra to material damage and modification. This work brings femtosecond temporal control to traditionally "static" measurements and informs new strategies for strong-field diagnostics, waveform-engineered interactions, and optimized high-intensity laser–matter coupling.

## RESEARCH INTERESTS

- Ultrafast strong-field dynamics and cascaded electron-driven transformations in complex molecular and condensed-phase systems
- MIIPS-enabled femtosecond pulse shaping, high-contrast few-cycle sources, and adaptive control of laser–matter interactions
- Radiation–biomolecule interactions, ionization-induced damage, and electron-impact–initiated chemistry
- Ultrafast spectroscopy and imaging of chemical, biological, and materials systems
- Spectral-phase encoding, secure optical communications, and neuromorphic/analog photonic signal processing

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## EDUCATION

- **Postdoctoral Research Fellow**, California Institute of Technology, 1993
  - Advisor: Ahmed H. Zewail
  - Ultrafast electron diffraction for real-time structural studies of chemical reactions
- **Ph.D. in Chemical Physics**, California Institute of Technology, 1991 (with A.H. Zewail)
  - Dissertation: *Femtosecond Transition-State Spectroscopy of Chemical Reactions*
  - Awards: Milton and Francis Clauser Doctoral Prize; ACS Nobel Laureate Signature Award
- **B.A. & M.A. in Chemistry**, Brandeis University, 1982-1985

## ACADEMIC AND PROFESSIONAL POSITIONS

- 2024– Professor, Department of Electrical and Computer Engineering, Michigan State University
- 2015– MSU Foundation Professor, Michigan State University
- 2015– University Distinguished Professor, Michigan State University
- 2002– Professor, Department of Chemistry, Michigan State University
- 2001– Adjunct Professor, Department of Physics and Astronomy, Michigan State University
- 1999–2002 Associate Professor, Department of Chemistry, Michigan State University
- 1993–1999 Assistant Professor, Department of Chemistry, Michigan State University
- 1991–1993 Postdoctoral Research Fellow, California Institute of Technology

## HONORS AND AWARDS

- 2023 Ahmed Zewail Award in Ultrafast Science and Technology
- 2020 Modern Optics and Spectroscopy Seminar, MIT
- 2019 Richard B. Bernstein Lecture, University of California, Los Angeles
- 2019 Technology Transfer Achievement Award, Michigan State University
- 2015 MSU Foundation Chair, Michigan State University
- 2015 University Distinguished Professor, Michigan State University
- 2014 Fellow, National Academy of Inventors
- 2014 Fellow, American Physical Society
- 2014 Fellow, Optical Society of America (Optica)
- 2013 Inventor of the Year Award, Michigan State University
- 2012 CLEO/Laser Focus World Innovation Award Winner (development of femtoAdaptiv)
- 2009 PhAST/Laser Focus World Innovation Award Winner (development of femtoFit)
- 2008 University Distinguished Faculty Award, Michigan State University
- 2007 Laser Focus World Commendation for Excellence in Technical Communications
- 2007 PhAST/Laser Focus World Innovation Award Honorable Mention (development of MIIPS)
- 2006 College of Natural Sciences Distinguished Faculty Award, Michigan State University
- 2001 Plenary Speaker, 8th International Workshop on Femtosecond Technology, Tsukuba, Japan
- 2001 Featured in ACS 125th Anniversary Issue of *Chemical & Engineering News*
- 1998 Camille Dreyfus Teacher-Scholar Award
- 1998 Alfred P. Sloan Research Fellow
- 1996 Lilly Teaching Fellowship
- 1995 Packard Fellowship for Science and Engineering
- 1995 Beckman Young Investigator Award
- 1994 General Electric Foundation Faculty Award
- 1993 Camille and Henry Dreyfus New Faculty Award
- 1992 Nobel Laureate Signature Award for Graduate Education in Chemistry
- 1991 Milton and Francis Clauser Doctoral Prize, California Institute of Technology
- 1991 Herbert Newby McCoy Award, California Institute of Technology
- 1985 Phi Beta Kappa, Brandeis University

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## PUBLICATIONS

**Publication summary**
268 publications, 14,900 citations; h-index 64; i10-index 194 (Google Scholar, including patent citations).

- **Full publication list**: see attached document . Appendix – A
- **Selected Publications in the Field of Optics:** see attached document. Appendix - B

## PATENTS AND INVENTION DISCLOSURES

**Patent summary**
37 issued patents, 5 pending patents, and 5 invention disclosures (2022–2025).

- **Full patent portfolio**: see attached document. Appendix - C

## RESEARCH FUNDING

Dantus has maintained continuous external funding for cutting-edge experimental laboratories in ultrafast science since 1993, with support from major federal agencies and industrial partners. A detailed funding history is provided in the attached "Funding History (1993–2025)" document. Appendix -D

## ENTREPRENEURSHIP AND TECHNOLOGY TRANSFER

- **Founder, Chairman of the Board, and CTO**, Biophotonic Solutions Inc. (2003–2017)
  Commercialized MIIPS-based femtosecond pulse shaping and measurement technology for scientific, medical, and industrial laser systems. Company later acquired by IPG Photonics (2016).
- **Founder and Member of the Board of Directors**, KTM Industries Inc. (1998–2004)
  Developed and commercialized biodegradable foam materials for protective packaging; company later acquired by TemperPack (2022).
- **Director of Research and Development**, Total Power Inc. (starting in 1998)
  Advisor for fuel additive technologies aimed at improving efficiency and reducing emissions; products used primarily in the mining industry.

## INVITED TALKS AND KEYNOTES (SELECTED 2020–2025)

- **Complete invited talks and keynotes list 2000-2025**: see attached document. Appendix -E

• 2024 – Invited Speaker, Department of Photon Science, Stanford University, Menlo Park CA.
• 2024 – Invited Talk, Photodynamics 2024, Santiago Chile.
• 2024 – Invited Talk, Ultrafast Nonlinear Optics and Optical Spectroscopy, IISER Mohali, India.
• 2023 – Invited Speaker, Department of Chemistry, Tel Aviv University, Tel Aviv, Israel
• 2023 – Invited Speaker, Department of Chemistry, Colorado State University, Fort Collins, CO.
• 2023 – Invited Speaker, Department of Chemistry, University of Colorado Boulder, Boulder, CO.
• 2023 – Presentation as recipient of the Ahmed H. Zewail Award in Ultrafast Science and Technology
• 2023 – Invited Speaker, Department of Chemistry, University of California San Diego, San Diego, CA.
• 2023 – Invited Speaker, Department of Physics, University of Konstanz, Konstanz, Switzerland.
• 2023 – Invited talk, Femtochemistry 15 Conference, Berlin, Germany.
• 2023 – Invited talk, XVII Iberian Joint Meeting on Atomic and Molecular Physics (IBER2023) Conference, Coimbra, Portugal
• 2022 – Invited Talk, SLAC, Stanford University, Stanford CA.
• 2022 – Invited Speaker, Gordon Conference, Molecular Dynamics
• 2022 – Invited Speaker, MOLEC 2022, Hamburg, Germany.
• 2021 – Invited talk Center for Free-Electron Laser Science - Deutsches Elektronen-Synchrotron DESY

- • 2020 – Invited to preset a Modern Optics and Spectroscopy Seminar at MIT, Cambridge, MA.

## TEACHING EXPERIENCE

- Teaching awards: Lilly Teaching Fellowship
- Camille Dreyfus Teacher-Scholar Award.

### Undergraduate courses

- CEM 141 – General Chemistry
- CEM 142 – General and Inorganic Chemistry
- CEM 152 – Principles of Chemistry
- CEM 181H – Honors Chemistry I
- CEM 186 – Honors General Chemistry Laboratory
- CEM 383 – Introductory Physical Chemistry I

### Graduate courses

- CEM 881 – Atomic and Molecular Structure
- CEM 882 – Kinetics and Spectroscopic Methods
- CEM 987 – Selected Topics in Physical Chemistry I
    - Ultrafast Nonlinear Spectroscopy
- CEM 988 – Selected Topics in Physical Chemistry II
    - Time-Resolved Quantum Mechanics (2024)
- CEM 991 – Quantum Chemistry and Statistical Thermodynamics I

### Invited courses outside my home institution

- Ultrafast Pulse Compression, Shaping, and Characterization for OSA, CLEO (2012-2026)
- Tutorial on Nonlinear Optical Spectroscopy Trace Explosives Detection Workshop TED2016
- Chautauqua on Nonlinear Optics summer short course run annually at Purdue 2014
- Ultrafast Pulse Shaping 3-day Workshops, MSU August 2010, 2011, 2012, 2013
- Short Course on Ultrafast pulse shaping and pulse compression for SPIE Photonics West (2012-2014)
- CoCoChem Summer School, (3 days of lectures) University College London, invited lecturer 2009
- Optics and Photonics School, (2 days of lectures) Sao Carlos, Brazil 2008
- Advanced Optical Imaging Workshop, Melbourne, Australia 2007
- Coherent control of nonlinear optical excitation," iNano Workshop, Aalborg, Denmark, 2003

## MENTORING AND SUPERVISION

- Supervised numerous (>30) Ph.D. and M.S. students in chemistry, ECE, and physics working on ultrafast science, pulse shaping, and strong-field dynamics.
- Mentored a large cohort of postdoctoral researchers (>20) who have gone on to careers in academia, industry, and national laboratories.
- Supervised many undergraduate researchers (>50); several have co-authored publications and pursued graduate study in physical chemistry, optics, and related disciplines.

## PROFESSIONAL SERVICE

### Professional activities and societies

- 2022–present APS Physicist To-Go and Quantum To-Go lecturer

- 2022–present Consultant, Teledyne FLIR
- 2022–2024 Expert witness
- 2017–2021 Consultant, IPG Photonics Inc.
- 2015–present International Advisory Committee and Organizer, FEMTO Conferences
- 2012 DARPA Workshop Program in Ultrafast Laser Science and Engineering (PULSE)
- 2012 Committee of Atomic, Molecular and Optical Sciences, National Research Council
- 2010–present Editorial Board Member, *Journal of Raman Spectroscopy*
- 2007–2013 Advisory Editorial Board Member, *Chemical Physics Letters*
- 2006–2012 Board of Advisors, *Journal of Physical Chemistry*
- 2004 President, Phi Beta Kappa, Epsilon Chapter of Michigan
- 2004 Member, Ultrafast Dynamics Committee, IQEC
- 2004 Member, Steering Committee, Ultrafast X-Ray Science
- 2004 DARPA Workshop on Arbitrary Waveform Generation
- 2003 Vice-President, Phi Beta Kappa, Epsilon Chapter of Michigan
- 2002 Invited Scientist, Scientist Helping America Conference, USSOCOM

## SERVICE TO DEPARTMENT, UNIVERSITY, AND PROFESSION (SELECTED)

### Departmental and college service

- Member of 11–12 graduate guidance committees every year
- Graduate Advising Committee (multiple instances)
- Department Safety Committee (multiple instances)
- Reappointment and Promotions Committee (multiple instances)
- Awards Committee (multiple instances)
- CNS / College Reappointment and Promotions Committee
- University Hearing Office / University Hearing Board (1999–2001; 2005–2007)
- Diversity, Equality, and Inclusivity (DEI) Committee
- Vice President (2003–2004) and President (2004–2005), Phi Beta Kappa, MSU Chapter.
- University Research Corridor Tour (MSU), faculty participant
- Member, Search Committee for the Vice President for Research (2012)
- Associate Chair for Research, Department of Chemistry (2024-2025)
- Access, Community, and Excellence Committee (2025-2026)

### Editorial and advisory boards

- Member of the Advisory Committee for the Center for Advanced Reaction Dynamics (CARD), Korea.
- Advisory Board / Board of Advisors, Chemical Physics Letters
- Editorial Board / Advisory Board, Journal of Raman Spectroscopy
- Board of Advisors, Journal of Physical Chemistry
- Member, Scientific Advisory Board for a MURI Center on Dynamic Magneto-Optics (DYNAMO), University of Michigan.
- Guest Editor for special issues on femtochemistry and ultrafast lasers in Chemical Reviews and Optical Engineering (2002–2004, 2013–2014)

### Conference and community organization

- Organizer, Nobel Prize Symposium in honor of Ahmed H. Zewail, ACS National Meeting, Washington, DC (2001)
- International organizing committee, Femtochemistry Conferences (multiple years including 2009, 2011, FEMTO14 in Shanghai, FEMTO15 in Berlin)
- Organizer and co-organizer of specialized workshops (e.g., NSF Mid-Scale Instrument Development Workshop, FEIS-2, Laser Probing of Matter meetings), including responsibility for program design, funding, and speaker selection
- Organizer, annual MIIPS and Ultrafast Pulse Shaping Workshops, Michigan State University (2009–2013)
- Organizer, Femtochemistry 13 Conference, Cancun, Mexico (2017).

**Grant, panel, and review service**

- Book reviewer for J. Am. Chem. Soc. (review of "Femtosecond Laser Pulses: Principles and Experiments," 1999).
- Regular referee for leading journals including Science, Nature, Nature Photonics, Optica, Journal of Chemical Physics, Journal of Physical Chemistry, Optics Letters, Optics Express, Physical Review Letters, and others.
- Reviewer and panelist for major funding programs at NSF (Chemistry, AMO Physics, CAREER, MRI, STC, SBIR), NIH, DOE (BES/AMOS), AFOSR, ONR, ARO, ARPA-E, and international agencies (e.g., US–Israel Binational Science Foundation, Canada Foundation for Innovation, Israeli Science Foundation).
- External reviewer for faculty promotion and tenure cases at U.S. and international universities (approximately one per year.
- Panelist and reviewer for NSF (including Major Research Instrumentation panels, and undisclosed major award committees)
- Reviewer for DOE, AFOSR, Argonne, Stanford Linear Accelerator, and other national labs/agencies
- Reviewer for the Israeli Science Foundation and Canadian Research Council
- Industrial/technology advisory roles
- Scientific Advisor to Total Power Inc. (fuel additives for reduced emissions)

**OUTREACH AND PUBLIC ENGAGEMENT (SELECTED)**

- Extensive K–12 and community outreach, including multiple hands-on chemistry presentations and career talks at local schools and "Meet a Scientist" events.
- Keynote Address, Phi Beta Kappa, "Teaching after the information revolution" (2003).
- Public talks and panels on innovation and entrepreneurship for MSU Foundation, Michigan Economic Development Corporation, and regional "Smart Zone" initiatives.
- Numerous national and international media interviews on ultrafast laser–based standoff detection of explosives and related technologies (2011, 2013).
- Invited panelist, Michigan Policy Conference (Mackinac Island, 2012)
- Invited speaker at International Mining Expo (IMEX, 2014)
- High-level Pentagon meeting on reducing fuel consumption and emissions (2014).
- Invited public presentation for 'Viaje Quantico,' a series of speakers and activities celebrating the 100 years of Quantum Mechanics. Universidad Autonoma de Mexico, Mexico (2025)

**LANGUAGES**

- Spanish, English, Hebrew (fluent); French, Italian, Portuguese (conversational).

## PROFESSIONAL MEMBERSHIPS

- APS, ACS, Optica, IEEE, AAAS, Real Sociedad Española de Física

# Appendix A – Full Publications List, M. Dantus

**Book**:
M. Dantus, *Femtosecond Laser Shaping: From Laboratory to Industry*, 1st ed., CRC Press, Boca Raton (2017).

**Scientific Publications**: (Selected Optics and Ultrafast Laser Technology Publications in Appendix B)

267. S. V. Anishchik, S. P. F. Roberts, S. S. Nicley, M. Dantus, "Single-shot 3D optical microscope with nanometer longitudinal resolution based on a Linnik interferometer," *Proc. SPIE* 13325, 1332509 (2025).
266. M. Dantus, "Detecting the Feeble Electromagnetic Emissions from Cancer Biomarkers," ACS Cent. Sci. 11, 505 (2025).
265. S. Kwon, J. Stamm, M. Dantus, "Ultrafast Dynamics and Rearrangement of the EUV Photoacid Generator Phenyl Triflate," J. Phys. Chem. Lett. 16, 3397 (2025). Featured in the journal cover.
264. J. Stamm, S. S. Priyadarsini, S. Sandhu, A. Chakraborty, J. Shen, S. Kwon, J. Sandhu, C. Wicka, A. Mehmood, B. G. Levine, P. Piecuch, M. Dantus, "Factors governing H3+ formation from methyl halogens and pseudohalogens," Nat. Commun. 16, 410 (2025).
263. J. Stamm, S. Kwon, M. Dantus, "Determining Key Factors for the Open-Loop Control of Molecular Fragmentation Using Shaped Strong Fields," J. Phys. Chem. Lett. 15, 9099 (2024).
262. E. Prieto Zamudio, R. Das, N. Krishnakanth Katturi, J. Stamm, J. Sandhu, S. Kwon, M. Minasian, M. Dantus, "Enhanced strong-field ionization and fragmentation of methanol using non-commensurate field," J. Phys. Chem. A. 128, 9099 (2024).
261. M. Dantus, "Ultrafast studies of elusive chemical reactions in the gas phase," Science 385, eadk1833 (2024).
260. S. Anishchik, M. Dantus, "Optical microscope with nanometer longitudinal resolution based on a Linnik interferometer," J. Opt. 26 115602 (2024).
259. J. Stamm, S. Kwon, S. Sandhu, J. Sandhu, B. Levine, M. Dantus, "Coherence mapping to identify the intermediates of multi-channel dissociative ionization," Commun. Chem. 7, 103 (2024).
258. M. Dantus, "Tracking Molecular Fragmentation in Electron-Ionization Mass Spectrometry with Ultrafast Time Resolution," Acc. Chem. Res. 57, 033003 (2024). Featured in the journal cover.
257. T. Severt, E. Weckworth, B. Kaderiya, P. Feizollah, B. Jochim, K. Borne, F. Ziaee, K. Raju, K. Carnes, M. Dantus, D. Rolles, A. Rudenko, E. Wells, I. Ben-Itzhak, "Initial-site characterization of hydrogen migration following strong-field double-ionization of ethanol," Nat. Comm. 15, 74 (2024).
256. J. Stamm, S. Kwon, S. Sandhu, M. Shaik, R. Das, J. Sandhu, B. Curenton, C. Wicka, B. G. Levine, L. Sun, M. Dantus, "The Surprising Dynamics of the McLafferty Rearrangement ," J. Phys. Chem. Lett. 14, 10088-10093 (2023). Featured in the journal cover.
255. S. Kwon, S. Sandhu, M. Shaik, J. Stamm, J. Sandhu, R. Das, C. V. Hetherington, B. G. Levine, M. Dantus, "What is the mechanism of H3+ Formation from Cyclopropane?," J. Phys. Chem. A. 127, 8633-8638 (2023).
254. M. Dantus, "Insights into ultrafast H3+ formation provide a glimpse into primordial chemistry," Nat. Chem. 15, 1202-1203 (2023).
253. J. Stamm, L. DeJesus, A. Jones, M. Dantus, "Quantitative Identification of Nonpolar Perfluoralkyl Substances by Mass Spectrometry", J. Phys. Chem. 126, 8851-8858 (2022).
252. J. Stamm, S. Li, B. Jochim, S. Yuwono, S. Priyadarsini, P. Piecuch, M. Dantus, "Femtosecond intramolecular rearrangement of the CH3NCS radical cation", J. Chem. Phys. 157, 214304 (2022).
251. S. Li, B. Jochim, J. Stamm, D. Peng, H. Shao, J. M. N. Djiokap, M. Dantus, "Pulse shaping in strong-field ionization: Theory and experiments," Phys. Rev. A 105, 053105 (2022).
250. B. Jochim, L. DeJesus, M. Dantus, "Ultrafast disruptive probing: simultaneously keeping track of tens of reaction pathways,", Rev. Sci. Instr. 93, 033003 (2022).
249. J. Lahiri, S. Sandhu, B. G. Levine, M. Dantus, "Human Serum Albumin Dimerization Enhances the S2 Emission of Bound Cyanine IR806," J. Phys. Chem. Lett. 13, 1825-1832 (2022).
248. B. Capistran, S. Yuwono, M. Moemeni, S. Maity, A. Vahdani, B. Borhan, J. Jackson, P. Piecuch, M. Dantus, G. J. Blanchard, "Intramolecular Relaxation Dynamics Mediated by Solvent-Solute Interactions of Substituted Fluorene Derivatives. Solute Structural-Dependence," J. Phys. Chem. B 125, 12486−12499 (2021).
247. B. Capistran, S. Yuwono, M. Moemeni, S. Maity, A. Vahdani, B. Borhan, J. Jackson, P. Piecuch, M. Dantus, G. J. Blanchard, "Excited State Dynamics of a Substituted Fluorene Derivative. The Central Role of Hydrogen Bonding Interactions with the Solvent," J. Phys. Chem. B 125, 12242−12253 (2021).
246. M. Laboe, J. Lahiri, N. Mohan T. M., F. Liang, B. Levine, W. Beck, M. Dantus, "Linear and Nonlinear Optical Processes Controlling $S_2$ and $S_1$ Dual Fluorescence in Cyanine Dyes," J. Phys. Chem. A 125, 9770−9784 (2021).
245. M. Dantus, "Ahmed Zewail: 1946–2016," Biographical Memoirs, the National Academy of Sciences (2021).

244. J. Lahiri, S. H. Yuwono, I. Magoulas, M. Moemeni, B. Borhan, G. J. Blanchard, P. Piecuch and M. Dantus, "Controlling Quantum Interference between Virtual and Dipole Two Photon Optical Excitation Pathways Using Phase-Shaped Laser Pulses," J. Phys. Chem. A 125, 7534−7544 (2021).
243. J. Stamm, and M. Dantus, "A comparison of strategies for state-selective coherent Raman excitation," J. Raman Spectroscopy (Special issue) 29, 14314−14325 (2021).
242. S. Li, B. Jochim, J. E. Jackson, and M. Dantus "Femtosecond dynamics and coherence of ionic retro-Diels–Alder reactions," J. Chem. Phys. 155, 044303 (2021).
241. J. Stamm, J. Benel, E. Escoto, G. Steinmeyer and M. Dantus, "Milliradian precision ultrafast pulse control for spectral phase metrology," Optics Express 29, 14314−14325 (2021).
240. J. Kline and M. Dantus, "The transition dipole moment representation and spectral phasors," Proc. SPIE 11648, 1164813 (2021).
239. J. Kline and M. Dantus, "Chemical complexity of the retina addressed by novel phasor analysis of unstained multimodal microscopy," Chem. Phys., 543, 111091 (2021).
238. J. Lahiri, M. Moemeni, J. Kline, I. Magoulas, S. H. Yuwono, M. Laboe, J. Shen, B. Borhan, P. Piecuch, J. E. Jackson, G. J. Blanchard, and M. Dantus, "Isoenergetic Two-Photon Excitation Enhances Solvent-to-Solute Excited-State Proton Transfer," J. Chem. Phys., 153, 224301 (2020).
237. J. Lahiri, M. Moemeni, I. Magoulas, S. H. Yuwono, J. Kline, B. Borhan, P. Piecuch, J. E. Jackson, G. J. Blanchard, and M. Dantus, "Steric effects in light-induced solvent proton abstraction," Phys. Chem. Chem. Phys. 22, 19613−19622 (2020).
236. J. Lahiri, J. Kline and M. Dantus, "Ultrafast pulse metrology for industrial applications," Proc. SPIE 11270, 112700K (2020).
235. S. Li, D. Sierra-Costa, M. J. Michie, I. Ben-Itzhak and M. Dantus, "Control of electron recollision and molecular nonsequential double ionization," Comm. Phys. 3, 35 (2020).
234. J. Lahiri, M. Moemeni, J. Kline, B. Borhan, I. Magoulas, S. H. Yuwono, P. Piecuch, J. E. Jackson, M. Dantus and G. J. Blanchard, "Proton Abstraction Mediates Interactions between the Super Photobase FR0-SB and Surrounding Alcohol Solvent," J. Phys. Chem. B 123, 8448 (2019).
233. A. Ghanbarpour, M. Nairat, M. Nosrati, E. M. Santos, C. Vasileiou, M. Dantus, B. Borhan, and J. H. Geiger, "Mimicking Microbial Rhodopsin Isomerization in a Single Crystal," J. Am. Chem. Soc. 141, 1735 (2019).
232. M. J. Michie, N. Ekanayake, N. P. Weingartz, J. Stamm, and M. Dantus, "Quantum coherent control of H3+ formation in strong fields," J. Chem. Phys. 150, 044303 (2019).
231. N. Ekanayake, M. Nairat, N. P. Weingartz, M. J. Michie, B. G. Levine, and M. Dantus, "Substituent effects on $H_3^+$ formation via $H_2$ roaming mechanisms from organic molecules under strong-field photodissociation," J. Chem. Phys. **149**, 244310 (2018).
230. N. Ekanayake, T. Severt, M. Nairat, N. P. Weingartz, B. M. Farris, B. Kaderiya, P. Feizollah, B. Jochim, F. Ziaee, K. Borne, K. Raju P., K. D. Carnes, D. Rolles, A. Rudenko, B. G. Levine, J. E. Jackson, I. Ben-Itzhak, and M. Dantus, "$H_2$ roaming chemistry and the formation of $H_3^+$ from organic molecules in strong laser fields," Nat. Commun. **9**, 5186 (2018).
229. W. Shang, M. Nairat, P. Pawlaczyk, E. Mroczka, B. Farris, E. Pines, J. Geiger, B. Borhan, and M. Dantus, "Ultrafast Dynamics of a "Super" Photobase," Angew. Chem. Int. Ed. Engl. 57, 14742-14746 (2018).
228. G.A. Murashova, C.A. Mancuso, J.L. Canfield, S. Sakami, K. Palczewski, G. Palczewska, and M. Dantus, "Multimodal nonlinear optical imaging of unstained retinas in the epi-direction with a sub-40 fs Yb-fiber laser," Biomed. Opt. Express 11, 5228 (2017).
227. V.V. Lozovoy, M. Nairat, and M. Dantus, "Binary-phase compression of stretched pulses," J. Opt. 19, 105506 (2017).
226. M. Dantus, "Femtosecond Laser Shaping: From Laboratory to Industry," CRC Press 2017.
225. N. Ekanayake, M. Nairat, B. Kaderiya, P. Feizollah, B. Jochim, T. Severt, B. Berry, K. Raju P., K.D. Carnes, S. Pathak, D. Rolles, A. Rudenko, I. Ben-Itzhak, C.A. Mancuso, B.S. Fales, J.E. Jackson, B.G. Levine, and M. Dantus, "Mechanisms and time-resolved dynamics for trihydrogen cation (H3+) formation from organic molecules in strong laser fields," Sci. Rep. 7, 4703 (2017).
224. M. Nairat, M. Webb, M.P. Esch, V.V. Lozovoy, B.G. Levine, and M. Dantus, "Time-resolved signatures across the intramolecular response in substituted cyanine dyes," Phys. Chem. Chem. Phys. 19, 14085-14095 (2017).
223. G. Rasskazov,* A. Ryabtsev,* and M. Dantus, "Eye-safe near-infrared trace explosives detection and imaging," Opt. Express 25, 5832-5840 (2017).
222. G.A. Murashova, C.A. Mancuso, S. Sakami, K. Palczewski, G. Palczewska, and M. Dantus, "Epi-direction detected multimodal imaging of an unstained mouse retina with a Yb-fiber laser," Proc. SPIE 10069, 100692K (2017).

221. G. Rasskazov, M. Nairat, I. Magoulas, V.V. Lozovoy, P. Piecuch, and M. Dantus, "Femtosecond real-time probing of reactions MMXVII: The predissociation of sodium iodide in the A 0+ state," Chem. Phys. Lett. 683, 121-127 (2017).
220. G. Rasskazov,* A. Ryabtsev,* K. Charan, T. Wang, C. Xu, and M. Dantus, "Characterization and adaptive compression of a multi-soliton laser source," Opt. Express 25, 320-329 (2017).
219. M. Nairat, V.V. Lozovoy, and M. Dantus, "Order of Magnitude Dissociative Ionization Enhancement Observed for Pulses with High Order Dispersion," J. Phys. Chem. A 120, 8529-8536 (2016).
218. I. Saytashev, R. Glenn, G.A. Murashova, S. Osseiran, D. Spence, C.L. Evans, and M. Dantus, "Multiphoton excited hemoglobin fluorescence and third harmonic generation for non-invasive microscopy of stored blood," Biomed. Opt. Express 7, 3449-3460 (2016).
217. H. Tu, Y. Liu, D. Turchinovich, M. Marjanovic, J.K. Lyngsø, J. Lægsgaard, E.J. Chaney, Y. Zhao, S. You, W.L. Wilson, B. Xu, M. Dantus and S.A. Boppart, "Stain-free histopathology by programmable supercontinuum pulses," Nat. Photonics 10, 534-540 (2016).
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60. M. Dantus, V. V. Lozovoy, I. Pastirk, "MIIPS characterizes and corrects femtosecond pulses," Laser Focus World 43, 101 (2007).
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63. B. Xu, Y. Coello, V. V. Lozovoy, D. A. Harris, M. Dantus, "Pulse shaping of octave spanning femtosecond laser pulses," Opt. Express 14, 10939 (2006).
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65. J. M. Gunn, B. Xu, J. M. Dela Cruz, V. V. Lozovoy, M. Dantus, "The MIIPS method for simultaneous phase measurement and compensation of femtosecond laser pulses and its role in two-photon microscopy and imaging," Proc. SPIE 6108, 61080C (2006).
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67. J. Dela Cruz, I. Pastirk, M. Comstock, V. Lozovoy, M. Dantus, "Use of coherent control methods through scattering biological tissue to achieve functional imaging," Proceedings of the National Academy of Sciences of The United States of America 101, 16996 (2004).
68. J. Dela Cruz, I. Pastirk, M. Comstock, M. Dantus, "Multiphoton intrapulse interference 8. Coherent control through scattering tissue," Opt. Express 12, 4144 (2004).
69. V. Lozovoy, I. Pastirk, M. Dantus, "Multiphoton intrapulse interference. IV. Ultrashort laser pulse spectral phase characterization and compensation," Opt. Lett. 29, 775 (2004).
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71. I. Pastirk, J. Dela Cruz, K. Walowicz, V. Lozovoy, M. Dantus, "Selective two-photon microscopy with shaped femtosecond pulses," Opt. Express 11, 1695 (2003).

**Intellectual Property Portfolio as of December. 9, 2025**

**Issued Patents**

| | PAT. NO. | Title |
|---|---|---|
| 37 | 12392028 | Laser Activated Luminescence System |
| 36 | 12332116 | Laser system with self-referencing shaper |
| 35 | 12308765 | Ionic liquid-based piezoelectric apparatus and related methods |
| 34 | 12019011 | Laser system for blood or tissue assessment |
| 33 | 11502473 | Laser apparatus including an optic dispersion compensator |
| 32 | 11385098 | Method and system for characterizing power in a high-power laser |
| 31 | 11274982 | Materials and apparatus with multiple impact level and torque detection |
| 30 | 10,971,881 | Laser pulse including a flat top |
| 29 | 10,656,062 | Materials with detectable compression memory |
| 28 | 10,598,682 | Laser system for measuring fluid dynamics |
| 27 | 10,444,100 | Materials and apparatus with multiple impact level and torque detection |
| 26 | 10,267,739 | Laser system for standoff detection |
| 25 | 10,130,511 | Adaptive laser system for ophthalmic surgery |
| 24 | 9,202,678 | Ultrafast laser system for biological mass spectrometry |
| 23 | 9,048,632 | Ultrafast laser apparatus (for LIBS DOE) |
| 22 | 9,018,562 | Laser material processing system |
| 21 | 8,861,075 | Laser amplification system |
| 20 | 8,675,699 | Laser pulse synthesis system |
| 19 | 8,633,437 | Ultra-fast laser system |
| 18 | 8,630,322 | Laser system for output manipulation |
| 17 | 8,618,470 | Laser based identification of molecular characteristics |
| 16 | 8,311,069 | Direct ultrashort laser system |
| 15 | 8,300,669 | Control system and apparatus for use with ultra-fast laser |
| 14 | 8,265,110 | Laser and environmental monitoring method |
| 13 | 8,208,505 | Laser system employing harmonic generation |
| 12 | 8,208,504 | Laser pulse shaping system |
| 11 | 8,185,209 | Methods to extend vision to infrared wavelengths |
| 10 | 7,973,936 | Control system and apparatus for use with ultra-fast laser |
| 9 | 7,609,731 | Laser system using ultra-short laser pulses |
| 8 | 7,583,710 | Laser and environmental monitoring system |
| 7 | 7,567,596 | Control system and apparatus for use with ultra-fast laser |
| 6 | 7,450,618 | Laser system using ultrashort laser pulses |
| 5 | 7,439,497 | Control system and apparatus for use with laser excitation and ionization |
| 4 | 7,105,811 | Control system and apparatus for use with laser excitation of ionization |
| 3 | 6,119,567 | Method and apparatus for producing a shaped article |
| 2 | EP1,723,704 | Laser system using ultra-short laser pulses (Europe) |
| 1 | JP60048 | Laser system using ultra-short laser pulses (Japan) |

**Pending US Patent Applications**

| | PUB. APP. NO. | Title |
|---|---|---|
| 1 | 20250369744 | MICROSCOPE INCLUDING INTERFEROMETER |

Appendix C – Full Patent Portfolio, M. Dantus

**MSU Invention Disclosures/Provisional Patent Applications**

| | MSUT No. | Title |
|---|---|---|
| 1 | TEC2025-0076 | Identifying high-frequency features in a broad background (provisional applied) |
| 2 | TEC2024-0084 | Bichromatic pulse compression (provisional applied) |
| 3 | TEC2023-0095 | Piezo-pneumatic device (provisional applied) |
| 4 | TEC2023-0094 | Pressure-Sensitive Charge-Producing device (provisional applied) |
| 5 | TEC2022-0135 | 3D Nanoscope (provisional applied) |

## Full Research Funding History

*Listed in reverse chronological order; PI unless otherwise noted*.

| Start | End | Source | Title | Amount |
|---|---|---|---|---|
| 10/1/26 | 9/1/30 | National Science Foundation | Research Infrastructure: Mid-scale RI-1 (M1:DA): Ultrafast Electron Microscopy Platforms for Mesoscale Science and Technology (pending) | $13,809,129 |
| 7/1/25 | 6/1/28 | Air Force Office of Scientific Research | Femtosecond Time- and Energy Resolved Electron Ionization Mass Spectrometry | $484,322 |
| 5/1/25 | 2/1/28 | Department of Energy | Dynamics and Control of Strong-Field Dissociative Ionization in Polyatomic Molecules | $600,000 |
| 8/1/24 | 7/1/27 | Department of Energy | Ultrafast time-resolved bimolecular reactions of neutral and ionic species | $576,130 |
| 7/1/22 | 6/30/27 | W.M. Keck Foundation | Diffraction-Less Optical Imaging - Achieving the Resolution of Electron Microscopy with Light in Living Systems | $650,000 |
| 3/1/25 | 8/1/25 | National Science Foundation | Quantum Photonic Integration and Deployment | $22,000 |
| 9/30/21 | 7/29/25 | Air Force Office of Scientific Research | Femtosecond Time-Resolved Electron Ionization Mass Spectrometry | $523,971 |
| 11/1/22 | 10/31/24 | Teledyne FLIR | FLIR Coherent Raman System for Non-Contact Chemical Detection | $174,662 |
| 9/30/21 | 9/29/24 | Air Force Office of Scientific Research | Femtosecond Time-Resolved Electron Ionization Mass Spectrometry | $176,617 |
| 9/15/09 | 11/14/23 | Department of Energy | SISGR: Understanding and Controlling Strong-Field Laser Interactions with Polyatomic Molecules | $2,347,039 |
| 2/14/22 | 11/13/22 | Great Lakes Crystal Technologies Inc | Next Generation Diamond Materials for High-Resolution Quantum Sensors | $23,020 |
| 8/15/19 | 7/31/22 | National Science Foundation | Effects Of Extracellular Matrix - Myocytes Mechanical Coupling in The Heart During Hypertension | $20,000 |
| 11/3/20 | 5/7/21 | IPG Photonics | Pulse Metrology for Quantitative Determination of An Ultrafast Laser Power Figure of Merit | $31,207 |
| 11/14/19 | 11/13/20 | Defense Advanced Research Projects Agency | Super-Photoreagents as A Gateway to Precision Chemistry | $159,881 |
| 8/15/18 | 7/31/20 | National Science Foundation | QLC: Eager: Quantum Control of Energy Transfer Pathways and Chemical Reactions | $259,234 |
| 8/1/15 | 7/31/18 | National Science Foundation | Multidimensional Spectroscopic Measurements on Single Molecules and Ensembles Taking Advantage of Broadband Shaped Pulses | $420,000 |
| 8/1/16 | 7/31/17 | National Science Foundation | Workshop On Chemical Sciences Needs for Mid-Scale Instrument Development | $67,924 |
| 2/5/15 | 8/4/16 | Department of Homeland Security | Single Ultrafast Pulse Excitation for Remote Stimulated Raman Scattering (Super-Srs) | $275,000 |
| 9/15/14 | 9/14/15 | Air Force Office of Scientific Research | Direct Optical Measurement of Vorticity in Fluid Flow | $66,898 |
| 8/28/14 | 8/27/15 | Air Force Office of Scientific Research | Development of  Femtosecond for High Rep-Rate Fluid Flow Imaging | $86,385 |
| 8/16/14 | 8/15/15 | Michigan Initiative for Innovation and Entrepreneurship | Towards Practical Standoff Detection of Trace Quantities of Explosives | $39,204 |
| 7/25/14 | 7/31/15 | Department of Defense | Binary Phase Amplification for Ultrafast Lasers | $40,000 |

Appendix D – Full Research Funding History, M. Dantus

| | | | | |
|---|---|---|---|---|
| 1/15/13 | 1/14/14 | Air Force Office of Scientific Research | Nonlinear Optical Imaging of Fluid Flow | $60,400 |
| 8/1/09 | 7/31/12 | National Science Foundation | Development Of a Phase and Polarization Modulated Ultrafast Laser Source for Nonlinear Optical Imaging and Molecular Identification | $749,369 |
| 7/15/10 | 6/30/12 | National Science Foundation | Development Of a Novel Laser Source for Nonlinear Optical Applications Early-Concept Grant for Exploratory Research | $272,000 |
| 6/15/10 | 6/14/12 | Air Force Office of Scientific Research | Pulse Shaping Based Ultra-Broad Bandwidth Multidimensional Spectroscopic Methods | $487,844 |
| 4/1/10 | 3/31/12 | Natl Inst Of Health - NIH/PHS | Improving Multiphoton Imaging with Shaped Ultrashort Laser Pulses | $397,376 |
| 2/23/09 | 3/31/11 | Spectral Energies, LLC | Spatially And Temporally Resolved Temperature and Species Concentration Measurements in High-Pressure Combustors Using F | $150,000 |
| 12/1/10 | 12/31/10 | St Mary's Hospital Grand Rapids | Pathology Sectioning with Ultrafast Laser | $10,000 |
| 2/9/10 | 9/30/10 | Johns Hopkins University/DHS | Single Beam Coherent Anti-Stokes Raman Scattering (Cars) | $408,335 |
| 6/29/09 | 1/25/10 | Polaronyx Inc. | Energy Scaling of Ultrashort Pulse (USP) High Energy Fiber Lasers Through Temporal Control | $21,000 |
| 12/21/06 | 12/31/09 | Michigan Economic Development Corp | Application Of Laser-Based Molecular Scalpel Technology for Proteomic and Metabolomic Analysis | $700,933 |
| 8/15/07 | 7/31/09 | National Science Foundation | Controlled Fragmentation and Ionization of Biological Samples | $150,072 |
| 9/15/08 | 1/31/09 | Innovative Scientific Solutions, Inc. | Single Beam Cars Project | $11,900 |
| 8/1/05 | 7/31/08 | National Science Foundation | A Systematic Approach Towards Robust and Efficient Coherent Control Based on Multiphoton Intrapulse Interference | $172,500 |
| 12/15/06 | 3/31/08 | Temple University | Development Of Super-Cars for Remote Detection of CBWA and Explosives | $148,986 |
| 1/1/04 | 12/31/07 | Department of Energy | Coherent Control of Multiphoton Transitions in The Gas and Condensed Phases with Ultrashort Shaped Pulses | $590,000 |
| 10/5/05 | 10/4/07 | Biophotonic Solutions Inc | Binary Phase Shaping for Fast Accurate and Reproducible Molecular Control and CB Detection | $225,969 |
| 8/1/04 | 7/31/07 | National Science Foundation | Development Of Ultrashort Phase-Shaped Femtosecond Laser Technology for Ultrafast Probing of Molecular Switches; Novel M | $204,009 |
| 1/25/07 | 4/18/07 | Mich Molecular Institute | Femtosecond Pulsed Laser Analytical Testing | $10,000 |
| 6/1/05 | 12/31/06 | Mich Univ Commercialization Initiative | Commercialization of MIIPS Box Technology | $38,000 |
| 4/1/02 | 3/31/05 | National Science Foundation | Ultrafast Dynamics and Reactivity in Ground and Excited States; Beyond the Pump Probe Method | $378,742 |
| 8/16/04 | 2/15/05 | Biophotonic Solutions Inc | Binary Phase Shaping for Fast Accurate and Reproducible Molecular Control and CB Detection | $30,348 |
| 4/1/01 | 12/31/03 | Department of Energy | Coherent Control of Molecules with Four Wave Mixing | $350,000 |
| 10/1/95 | 12/15/01 | David & Lucile Packard Foundation | Femtosecond Time-Resolved Measurements of Chemical & Biochemical Molecular Motion | $600,000 |
| 11/15/98 | 10/31/01 | National Science Foundation | Transition State Dynamics of Unconstrained Bimolecular Reactions | $352,000 |

Appendix D – Full Research Funding History, M. Dantus

| | | | | |
|---|---|---|---|---|
| 8/1/00 | 12/31/00 | Air Force Office of Scientific Research | Femtochemistry: 1999 Nobel Prize Symposium | $9,240 |
| 9/16/98 | 9/15/00 | Alfred P. Sloan Foundation | Alfred P Sloan Research Fellowship | $35,000 |
| 7/1/98 | 6/30/99 | Dreyfus Camille & Henry Found | Camille Dreyfus Teacher-Scholar Award | $60,000 |
| 7/1/95 | 6/30/96 | Arnold And Mabel Beckman Foundation | Time-Resolved Femtosecond to Microsecond Measurements of Molecular Motion | $200,000 |
| 7/1/93 | 6/30/94 | Dreyfus Camille & Henry Found | Camille & Henry Dreyfus New Faculty | $25,000 |

## Invited Talks and Keynotes (2000–2025)

• 2025 – Invited Speaker, FRISNO Conference, Aussois, France.
• 2024 – Invited Talk, Ultrafast Phenomena 2024, Barcelona, Spain.
• 2024 – Invited Speaker, Department of Photon Science, Stanford University, Menlo Park CA.
• 2024 – Invited Talk, Gaseous Electronics Conference, San Diego, CA.
• 2024 – Invited Talk, Photodynamics 2024, Santiago Chile.
• 2024 – Invited Talk, Ultrafast Nonlinear Optics and Optical Spectroscopy, IISER Mohali, India (via Zoom).
• 2023 – Invited Speaker, FRISNO Conference, Weizmann Institute and Ein-Gedi, Israel.
• 2023 – Invited Speaker, Department of Chemistry, Tel Aviv University, Tel Aviv, Israel.
• 2023 – Invited Speaker, Department of Chemistry, Colorado State University, Fort Collins, CO.
• 2023 – Invited Speaker, Department of Chemistry, University of Colorado Boulder, Boulder, CO.
• 2023 – Presentation as recipient of the Ahmed H. Zewail Award in Ultrafast Science and Technology.
• 2023 – Invited Speaker, Department of Chemistry, University of California San Diego, San Diego, CA.
• 2023 – Invited Speaker, Department of Physics, University of Konstanz, Konstanz, Switzerland.
• 2023 – Invited talk, Femtochemistry 15 Conference, Berlin, Germany.
• 2023 – Invited talk, XVII Iberian Joint Meeting on Atomic and Molecular Physics (IBER2023) Conference, Coimbra, Portugal.
• 2022 – Invited Talk, SLAC, Stanford University, Stanford CA.
• 2022 – Invited Speaker, Gordon Conference, Molecular Dynamics.
• 2022 – Invited Speaker, MOLEC 2022, Hamburg, Germany.
• 2021 – Invited talk Center for Free-Electron Laser Science – Deutsches Elektronen-Synchrotron DESY.
• 2021 – Invited Talk Pacifichem, Frontiers in Ultrafast Spectroscopy of Photoexcited States (via Zoom).
• 2021 – Invited Talk Pacifichem, Ultrafast Intense Laser Chemistry (via Zoom).
• 2020 – Invited to present at the UCI Irvine 2020 Retinal Imaging Colloquium.
• 2020 – Invited to preset a Modern Optics and Spectroscopy Seminar at MIT, Cambridge, MA.
• 2020 – Invited talk NSF NeXUS User Workshop on ‘Killer Applications’.
• 2020 – Invited talk at the ACS Symposium on Addressing Chemical Complexity.
• 2020 – Invited Talk, SLAC PULSE Workshop, Menlo Park, CA.
• 2019 – Invited colloquium speaker, Department of Physics, Georgia State University, Atlanta, GA.
• 2019 – Invited colloquium speaker, University of Arizona Dept. of Chemistry, Tucson, AZ.
• 2019 – Invited talk at the Femtosecond Electron Imaging and Spectroscopy 4 (FEIS-4) conference.
• 2019 – Invited talk at the 29th International Conference on Photochemistry.
• 2019 – Invited talk at Femtochemistry 14 Conference, in Shanghai, China.
• 2019 – Invited talk at the University of Shanghai for Science and Technology, Shanghai, China.
• 2019 – Invited to give the Richard Bernstein Lecture at UCLA, Los Angeles, CA.
• 2018 – Invited speaker, Femtochemistry 13 Conference, Cancún, Mexico.
• 2018 – Invited speaker, Symposium on Standoff Detection of Explosives, Pittcon 2018, [location].
• 2018 – Invited speaker, School of Engineering and Applied Sciences Seminar, Harvard University, Cambridge, MA.
• 2018 – Invited talk Nobel Laureate Ahmed Zewail’s Memorial Meeting. “Femtochemistry of extreme chemical reactions in gas and condensed phase.” Caltech, Pasadena CA.
• 2018 –Invited talk ACS Meeting, Strong Field Science: Boston, MA.
• 2018 – Plenary speaker: LXI National Physics Congress, Division of Atomic and Molecular Physics, Puebla, Mexico.
• 2018 – Invited speaker: Center for Ultrafast Optical Sciences, Noon Seminar, University of Michigan, Ann Arbor, MI.
• 2017 – Invited speaker, Pittcon 2017 Symposium on Standoff Detection of Explosives, Pittsburg, PA.
• 2017 – Invited speaker, Coblenz Society Spectroscopy Award Symposium (Biomedical Imaging), Pittcon 2017, Pittsburg, PA.
• 2017 – Invited speaker, Zewail Award Symposium, ACS National Meeting, San Francisco, CA.
• 2017 – Invited speaker, Novel Techniques in Microscopy Conference, San Diego, CA.
• 2017 – Invited speaker, Department of Chemistry Seminar, University of Pennsylvania, Philadelphia, PA.
• 2017 – Invited speaker, CLEO Symposium on Medical Devices and Systems (multimodal biomedical imaging), San Jose, CA.

# Appendix E - Invited Talks and Keynotes (2000–2025), Marcos Dantus

• 2017 – Plenary talk at the at the Universidad Autonoma Metropolitana Ixtapalapa in Mexico.
• 2017 – Invited talk at the OPUMA(Optics, Photonics and Upcoming Methods and Applications) at the Universidad Autonoma de Mexico.
• 2017 – Plenary talk at the Ultrafast Optics School 2017 at the Universidad Autonoma de Mexico.
• 2016 – Invited speaker, MSU Foundation Investiture Lecture, Michigan State University, East Lansing, MI.
• 2016 – Invited speaker, Joint Lecture to Ophthalmology, Pharmacology, and Biomedical Engineering, Case Western Reserve University, Cleveland, OH.
• 2016 – Invited short-course instructor, Nonlinear Optical Spectroscopy Course, Trace Explosives Detection Conference, Charlottesville, VA.
• 2016 – Invited speaker, DAMOP 2016 Conference, Providence, RI.
• 2016 – Invited speaker, CLEO 2016, Multisoliton Compression Session, San Jose, CA.
• 2016 – Invited lecture, ICFO – The Institute of Photonic Sciences, Barcelona, Spain.
• 2016 – Invited speaker, Traumatic Brain Injury Summit, Philadelphia, PA.
• 2016 – Invited speaker, MSU Foundation Professor Investiture Talk, Michigan State University, East Lansing, MI.
• 2015 – Invited speaker, Physics of Quantum Electronics (PQE) Conference, Snowbird, UT.
• 2015 – Invited speaker, Chemistry Colloquium, Ohio State University, Columbus, OH.
• 2015 – Invited speaker, Physics Colloquium, University of California, Irvine, Irvine, CA.
• 2015 – Invited speaker, Trace Explosives Detection Conference, Pittsburgh, PA.
• 2015 – Invited speaker, FEIS-2: Femtosecond Electron Imaging and Spectroscopy Conference, East Lansing, MI.
• 2015 – Invited speaker, Laser and Applied Photonics Seminar, Michigan State University, East Lansing, MI.
• 2015 – Invited speaker, APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Meeting, Columbus, OH.
• 2015 – Invited speaker, Spectroscopic Imaging Workshop, Purdue University, West Lafayette, IN.
• 2015 – Invited speaker, Advanced Solid State Lasers Conference and Exhibition (ASSL), Berlin, Germany.
• 2015 – Invited speaker, Joint Laser Seminar, Institute of Quantum Electronics and Laboratory of Physical Chemistry, ETH Zürich, Zürich, Switzerland.
• 2014 – Invited speaker, Symposium on Nonlinear Optical Spectroscopy, Pittcon, Chicago, IL.
• 2014 – Invited speaker, Department of Chemistry Seminar, Northwestern University, Evanston, IL.
• 2014 – Invited speaker, Symposium on Ultrafast Laser Applications in Mass Spectrometry, Pittcon, Chicago, IL.
• 2014 – Invited speaker, Department of Chemistry Seminar, Wayne State University, Detroit, MI.
• 2014 – Invited speaker, International Mining Expo (IMEX), on reducing fuel consumption and emissions in mining operations, Las Vegas, NV.
• 2014 – Invited speaker, Chautauqua Program, Purdue University, West Lafayette, IN.
• 2014 – Invited speaker, Gordon Conference on Medical Lasers, New Hampshire, NH.
• 2014 – Invited speaker, LAMMP Seminar, Beckman Laser Institute and Medical Clinic, University of California, Irvine, Irvine, CA.
• 2014 – Invited speaker, SciX Conference, Reno, NV.
• 2014 – Invited speaker, Frontiers in Optics, Tucson, AZ.
• 2014 – Invited speaker, Dow Chemical Company, Midland, MI.
• 2014 – Invited speaker, Physical Chemistry Seminar, Ohio State University, Columbus, OH.
• 2014 – Invited speaker, Physics Colloquium, Ohio State University, Columbus, OH.
• 2014 – Invited speaker, Physical Chemistry Seminar, University of California, Davis, Davis, CA.
• 2014 – Invited speaker, Colloquium, Center for Ultrafast Optical Science, University of Michigan, Ann Arbor, MI.
• 2014 – Invited speaker, LCLS-II Workshop, SLAC National Accelerator Laboratory, Menlo Park, CA.
• 2013 – Invited colloquium speaker, Arizona College of Optical Sciences, Tucson AZ.
• 2013 – Invited colloquium speaker, Department of Physics, Kansas State University, Manhattan, KS.
• 2013 – Invited colloquium speaker, Department of Chemistry, University of Chicago, Chicago, IL.
• 2013 – Invited speaker, 11th Femtochemistry Conference, Copenhagen, Denmark.
• 2013 – Invited speaker, Telluride Conference on Frontiers in Biomedical Imaging, Telluride, CO.
• 2013 – Invited speaker, SciX Conference session on Standoff Detection of Explosives, Milwaukee, WI.
• 2013 – Invited speaker, ITAMP–Kansas meeting on Molecules Under Intense Laser Fields, Lawrence, KS.
• 2013 – Invited speaker, Modern Optics and Spectroscopy Series, Massachusetts Institute of Technology, Cambridge, MA.
• 2013 – Invited speaker, Department of Chemistry Colloquium, Boston University, Boston, MA.
• 2013 – Invited speaker, OSA Incubator Meeting on Multiphoton Optogenetics (NSF–OSA), [location].

# Appendix E - Invited Talks and Keynotes (2000–2025), Marcos Dantus

• 2012 – Invited panelist, Michigan Policy Conference, Mackinac Island, MI (speaking on Biophotonic Solutions and export-driven photonics).
• 2012 – Chair and moderator, Market Focus Panel on Ophthalmic Applications of Femtosecond Lasers, CLEO.
• 2012 – Invited presentation, DARPA Workshop Program in Ultrafast Laser Science and Engineering (PULSE).
• 2012 – Invited talk, GE Global Research Center, Niskayuna, NY.
• 2012 – Invited speaker, Coherent Control Conference, Neve Ilan, Israel.
• 2012 – Invited talk, Waterloo Chemical Physics Conference, Waterloo, Ontario, Canada.
• 2011 – Leader, invited discussion on "Biophotonics Technology Transfer," CLEO.
• 2011 – Invited Talk, Physics and Quantum Electronics (PQE) Conference, Snowbird, UT.
• 2011 – Invited Talk, Novel Methods in Microscopy Conference, Monterrey CA.
• 2011 – Invited Lecture at the department of Electrical Engineering, University of Colorado Boulder, CO.
• 2011 – Invited Lecture at Joint Institute for Laboratory Astrophysics (JILA), University of Colorado Boulder, CO.
• 2011 – Invited Talk, European Conference on Nonlinear Optical Spectroscopy, Twente University, Twente, Netherlands.
• 2011 – Invited to give a Quantum Science Colloquium at the Imperial College, London, England.
• 2010 – Invited speaker, Physics and Quantum Electronics (PQE) Conference, Snowbird, UT.
• 2010 – Invited speaker, Ringberg Coherent Control Conference, Ringberg, Germany.
• 2010 – Invited Speaker, European Conference on Nonlinear Optical Spectroscopy, Bremen, Germany.
• 2010 – Invited Speaker, Canadian Chemical Society, Ottawa, CA.
• 2010 – Invited Talk, Department of Chemistry, Weizmann Institute, Rehovot, Israel.
• 2010 – Invited Speaker, International Conference on Raman Spectroscopy, Boston MA.
• 2010 – Invited Talk, Federation of Analytical Chemistry and Spectroscopy Societies, Raleigh NC.
• 2009 – Invited speaker, Small Chemical Businesses and Nanoscience Symposium, ACS National Meeting.
• 2009 – Invited speaker, Femtochemistry 9 Conference, Beijing, China.
• 2005 – Invited Speaker, Michigan Universities Commercialization Initiative, Ann Arbor, MI.
• 2004 – Invited Speaker, DARPA Workshop on Arbitrary Waveform Generation, Washington, DC.
• 2004 – Han-Mo Koo Memorial Seminar Lecture, Van Andel Institute, Grand Rapids, MI.
• 2003 – Phi Beta Kappa Keynote Address, "Teaching after the information revolution," Michigan State University.
• 2001 – Plenary lecture, 8th International Workshop on Femtosecond Technology (FST 2001), Tsukuba, Japan.
• 2000 – Keynote speaker, Tau Beta Pi, MSU chapter, Michigan State University.
• 2000 – Invited speaker, Haslett Rotary Club, Haslett, MI.