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**Curriculum Vitae**

Department of Chemistry and Department of Physics and Astronomy,  
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**Personal Information**

Born in Mexico, US-citizen

**Education**

Postdoc California Institute of Technology (6/1991-6/1993) Advisor: Ahmed H. Zewail

Development of an ultrafast electron diffraction technique for real-time structural studies of chemical reactions

Ph.D. Chemistry, California Institute of Technology (6/1985 - 6/1991) Advisor: Ahmed H. Zewail

Femtosecond Transition-State Spectroscopy of Chemical Reactions” Cited in Chemistry Nobel Prize 1999

B.A. & M.A. Chemistry, Brandeis University (6/1982 – 5/1985), Magna Cum Laude

**Professional Experience**

MSU Foundation Chair, Michigan State University (2015)

University Distinguished Professor, Michigan State University (2015)

Professor, Department of Chemistry, Michigan State University (2002 – present)

Adjunct Professor, Department of Physics and Astronomy, Michigan State University (2001 – present)

Associate Professor, Department of Chemistry, Michigan State University (1999 – 2002)

Assistant Professor, Department of Chemistry, Michigan State University (1993 – 1999)

Postdoctoral Research Fellow, California Institute of Technology (1991 – 1993)

Research and Teacher Assistant, California Institute of Technology (1985 – 1991)

**Entrepreneurial Experience**

Founder of MTBIsense LLC (2015-present)

Chairman of the Board and Chief Technology Officer, Biophotonic Solutions Inc. (2013 – 2016)

Founder, President and CEO, Biophotonic Solutions Inc. (2003 – 2013)

Director of Research and Development for Total Power Inc. (1998 – present)

Founder and member of the Board of Directors, KTM Industries Inc. (1998 – 2004)

**Honors**

2015 Named MSU Foundation Chair, Michigan State University

2015 Named University Distinguished Professor, Michigan State University

2014 Elected Fellow of the National Academy of Inventors

2014 Elected Fellow of the American Physical Society

2014 Elected Fellow of the Optical Society of America

2013 Inventor of the Year Award, Michigan State University

2012 CLEO/Laser Focus World Innovation Award Winner, for development of femtoAdaptiv

2009 PhAST/Laser Focus World Innovation Award Winner, for 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, for development of MIIPS

2006 College of Natural Sciences Distinguished Faculty Award, Michigan State University

1998 Camille Dreyfus Teacher-Scholar Award

1998 Alfred P. Sloan Research Fellow

1996 Eli 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 The Herbert Newby McCoy Award, California Institute of Technology

1985 Phi Beta Kappa, Brandeis University

### **Professional Affiliations**

Fellow of the National Academy of Inventors (NAI), Fellow of the Optical Society of America (OSA); Fellow of the American Physical Society (APS); member of the American Chemical Society (ACS); Phi Beta Kappa

### **Professional Activities**

International Advisory Committee and Organizer of the FEMTO Conferences 2015 - 2017

Invited presentation at the Spatially Precise Optogenetics at Depth Incubator Meeting, BRAIN initiative sponsored by OSA and NSF, Washington DC, December 2013

Invited presentation at the DARPA Workshop Program in Ultrafast Laser Science and Engineering (PULSE) 2012

Invited presentation Committee of Atomic Molecular and Optical Sciences, National Research Council 2012

Member of the Editorial Board of the Journal for Raman Spectroscopy, October 2010-present

Member of the Advisory Editorial Board of Chemical Physics Letters, September 2007-December 2013

Member of the Board of Advisors for the Journal of Physical Chemistry, January 2006-

NSF "broader impacts" in science, award showcased at the ACS National Meeting, Washington DC 2005

President of Phi Beta Kappa, Epsilon Chapter of Michigan, Michigan State University 2004

Member of the Ultrafast Dynamics Committee, IQEC-2004, San Francisco, CA 2004

Member of the Steering Committee, Ultrafast x-ray science 2004, San Diego, CA 2004

Invited Speaker at the DARPA Workshop on Arbitrary Waveform Generation, Washington DC, 2004

Vice-President of Phi Beta Kappa, Epsilon Chapter of Michigan, Michigan State University 2003

Invited Scientists for the Scientist Helping America Conference, by DARPA and USSOCOM, 2002

Plenary Speaker, 8<sup>th</sup> International Workshop on Femtosecond Technology, Tsukuba, Japan, 2001

Featured in the ACS 125<sup>th</sup> Anniversary Issue of Chemical and Engineering News, 2001

### **Funding**

Past and current funding at various times from NSF, DOE, ACS, AFOSR, ARO, DHS, NIH, ONR, Michigan Economic Development Fund, Sloan Foundation, Dreyfus Foundation, Packard Foundation, Beckman Foundation.

### **Publication Summary**

> 229 publications

> 10247 citations (Google Scholar)

Hirsch index 56 (56 publications with > 56 citations, Google Scholar)

i10-index 152 (152 publications with > 10 citations, Google Scholar)

### **Patent Summary**

> 25 issued, > 10 pending US and international patents

> 50 invention disclosures

### **POSTDOCTORAL FELLOWS\* AND GRADUATE STUDENTS:**

\*Pedro Cid-Aguero, Pao-Hua Liu, Peter Gross, Qingguo Zhang, Hanae Haouari, Bruna I. Grimberg, Vadim V. Lozovoy, Tissa Gunaratne, Don A. Harris, Peng Xi, Yair Andegeko, Dmitry Pestov, Yan Wan, Tapas Goswami, Sergey Arkhipov, Alexander van Rhijn, Richa Mittal, Rachel Glenn, Nagitha Ekanayake, Christopher Mancuso

Taeduck Yang, J. Greg Stanley, Lee Hoffman, Martha Gilchrist, Mark J. Waner, Una Marvet, Emily J. Brown, Igor Pastirk, Matthew Comstock, Evgeny Sudachenko, Vahan Senekerymian, Johanna Dela Cruz, Bingwei Xu, Michael Kangas, Jess Gunn, Yves Coello, Xin Zhu, Lindsay Weisel, Christine Kalcic, Paul Wrzesinski, Bai Nie, Jay Shah, Marshall Bremer, Orin Yue, Arkaprabha Konar, Ilyas Saytashev, Anton Ryabtsev, Gennady Rasskazov, Muath Nairat, Adam McKerlie, Gabrielle Murashova

### **UNDERGRADUATES & HIGH SCHOOL\* STUDENTS:**

Michael C. Machczynski, Glen Crowley, Lauren Heystek, Sandy Muscialowski, Melissa Rudzinski, Brent Kaufman, Katherine Walowicz, George Schoendorff, Robin Sloan, Matthew Penniman, Andrew Mackert, Victoria Sanocki, Phillip Grabowski, Joseph Schoendorff, Ross Eames, Tudor Simeonov, Matt Haflein, David Shibley, Nate Kaiser, Robert Darrow, Janelle Shane, Melinda Ewald, Mario Camhi, Leida J. Vanoss, Laura Schelhas, Rebekah M. Martin, Daniel Schlam, Thomas Lozanoski\*, Scott H. High, Kyle Sprague, Nelson S. Winkler, Jacob P. Bell, Michael R. Mendoza, Mason Hale\*, Marie Kaniecki, Dan Parker\*, Travis Boersma, Sagar Rathod\*, Greg Parker\*, Stephanie V Higgins, William Zeng\*, Kasey A Worst, Simone Merendi, Megan Rick, Cara Barber, Chris Juchem\*, Taylor Merkel\* Nathan Johnson, Elena Bongiovani, \*Jason Getzler, \*Ellise Mondragon, Alexius Lampkin, Morgan Webb, Lexi Langtri, Madi Corda, Peter Kramer, Patrick Pawlaczyk. Nicolas Weingartz, Peter Kramer, Benjamin Farris, Jake Canfield

## M. Dantus Publications

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<sub>2</sub> roaming chemistry and the formation of H<sub>3</sub><sup>+</sup> from organic molecules in strong laser fields," *Nature Communications*, in press (2018).
229. W. Shang, M. Nairat, P. Pawlaczyk, E. Mrocza, B. Farris, E. Pines, J. Geiger, B. Borhan, and M. Dantus, "Ultrafast Dynamics of a "Super" Photobase," *Angew. Chem. Int. Ed. In Press*, DOI:10.1002/anie.201806787 (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 (H<sub>3</sub><sup>+</sup>) 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<sup>+</sup> 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* DOI:10.1038/nphoton.2016.94 (2016).
216. A. Ryabtsev, S. Pouya, A. Safaripour, M. Koochesfahani, and M. Dantus, "Fluid flow vorticity measurement using laser beams with orbital angular momentum," *Opt. Exp.* 24, 11762-11767 (2016).
215. R. Glenn and M. Dantus, "Molecular level crossing and the geometric phase effect from the optical Hanle perspective," *Phys. Rev. A* 93, 043402 (2016).
214. S.N. Arkhipov, I. Saytashev, and M. Dantus, "Intravital Imaging Study on Photodamage Produced by Femtosecond Near-infrared Laser Pulses in Vivo," *Photochem. Photobiol.* 92, 308-313 (2016).
213. I. Saytashev, M. Murphy, S. Osseiran, D.M. Spence, C.L. Evans and M. Dantus "The nature of multiphoton fluorescence from red blood cells," *Proc. SPIE* 9712, 97121W (2016).
212. A. Konar, V.V. Lozovoy, and M. Dantus, "Stimulated Emission Enhancement Using Shaped Pulses," *J. Phys. Chem. A* 120, 2002-2008 (2016).
211. M. Nairat, A. Konar, V.V. Lozovoy, W.F. Beck, G.J. Blanchard, and M. Dantus, "Controlling S2 Population in Cyanine Dyes Using Shaped Femtosecond Pulses," *J. Phys. Chem. A* 120, 1876-1885 (2016).
210. R. Glenn and M. Dantus, "Single Broadband Phase-Shaped Pulse Stimulated Raman Spectroscopy for Standoff Trace Explosive Detection," *J. Phys. Chem. Lett.* 7, 117-125 (2016).
209. G. Rasskazov, A. Ryabtsev, V.V. Lozovoy, and M. Dantus, "Mitigating self-action processes with chirp or binary phase shaping," *Optics Letters* 41, 131-134 (2016).
208. M. Dantus, "More on femtosecond bond formation," *Physics Today* 68, 10-11 (2015).
207. M. Balu, I. Saytashev, J. Hou, M. Dantus, and B.J. Tromberg "Sub-40 fs, 1060-nm Yb-fiber laser enhances penetration depth in nonlinear optical microscopy of human skin," *J. Biomed. Opt.* 20, 120501 (2015).

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206. V.V. Lozovoy, G. Rasskazov, A. Ryabtsev, and M. Dantus, "Phase-only synthesis of ultrafast stretched square pulses," *Optics Express* 23, 27105-27112 (2015).
205. G. Rasskazov, V.V. Lozovoy, and M. Dantus, "Spectral amplitude and phase noise characterization of titanium-sapphire lasers," *Optics Express* 23, 23597-23602 (2015).
204. V.V. Lozovoy, G. Rasskazov, D. Pestov, and M. Dantus, "Quantifying noise in ultrafast laser sources and its effect on nonlinear applications," *Optics Express* 23, 12037-12044 (2015).
203. R. Mittal, R. Glenn, I. Saytashev, V. V. Lozovoy and M. Dantus, "Femtosecond Nanoplasmonic Dephasing of Individual Silver Nanoparticles and Small Clusters," *J. Phys. Chem. Lett.* 6, 1638–1644 (2015).
202. G. J. Parker, D. E. Parker, B. Nie, V. V. Lozovoy and M. Dantus, "LIBS and ablation threshold analysis using a megahertz Yb fiber laser oscillator," *Spectrochimica Acta Part B: Atomic Spectroscopy* (2015).
201. M. Nairat, A. Konar, M. Kaniecki, V. V. Lozovoy and M. Dantus, "Investigating the Role of Human Serum Albumin Protein Pocket on the Excited State Dynamics of Indocyanine Green Using Shaped Femtosecond Laser Pulses," *Phys. Chem. Chem. Phys* 17, 5872-5877 (2015).
200. I. Saytashev, B. Xu, M.T. Bremer, and M. Dantus, "Simultaneous Selective Two-Photon Microscopy Using MHz Rate Pulse Shaping and Quadrature Detection of the Time-Multiplexed Signal," *Ultrafast Phenomena XIX*, K. Yamanouchi et al., Eds. (Springer Proceedings in Physics 162, 2015).
199. B. Nie, I. Saytashev, and M. Dantus, "Towards a Compact Fiber Laser for Multimodal Imaging," *Ultrafast Phenomena XIX*, K. Yamanouchi et al., Eds. (Springer Proceedings in Physics 162, 2015).
198. A. Konar, V.V. Lozovoy, and M. Dantus, "Solvent Environment Revealed by Positively Chirped Pulses," *Ultrafast Phenomena XIX*, K. Yamanouchi et al., Eds. (Springer Proceedings in Physics 162, 2015).
197. A. Konar, Y. Shu, V.V. Lozovoy, J.E. Jackson, B.G. Levine, and M. Dantus, "Polyatomic Molecules under Intense Femtosecond Laser Irradiation," *J. Phys. Chem. A* 118, 11433-11450 (2014).
196. A. Ryabtsev, S. Pouya, M. Koochesfahani, and M. Dantus, "Vortices in the wake of a femtosecond laser filament," *Optics Express* 22, 26098-26102 (2014).
195. M. Dantus and K. Monro, "Ultrafast Temporal Shaping Is Coming of Age," *Biophotonics* 21, 24-28 (2014).
194. S. Pouya, A. Van Rhijn, M. Dantus, M. Koochesfahani, "Multi-photon molecular tagging velocimetry with femtosecond excitation (FemtoMTV)," *Experiments in Fluids* 55 (2014).
193. I. Saytashev, and M. Dantus "Multimodal Imaging of highly pigmented tissues," in *Biomedical Optics 2014*, OSA Technical Digest, paper BT3A.18 (2014).
192. G. Rasskazov, A. Ryabtsev, V.V. Lozovoy and M. Dantus, "Laser-induced dispersion control," *Optics Letters* 39 (2014).
191. H. Liu; W. Renninger; B. Nie; M. Dantus; F. Yu; J. Knight; A. Chong; F. Wise "High-power femtosecond fiber lasers based on self-similar pulse evolution," *Proc. SPIE 9136, Nonlinear Optics and Its Applications VIII; and Quantum Optics III*, 91360W (2014).
190. B. Nie, I. Saytashev, and M. Dantus "Towards a compact fiber laser for multimodal imaging," *Proc. SPIE 8948, 89480A* (2014).
189. I. Saytashev, B. Xu, M.T. Bremer and M. Dantus "Simultaneous selective two-photon microscopy using MHz rate pulse shaping and quadrature detection of the time-multiplexed signal," *Proc. SPIE 8948, 89482F* (2014).
188. A. Konar, V.V. Lozovoy, and M. Dantus, "Electronic dephasing of molecules in solution measured by nonlinear spectral interferometry," *ScienceJet* 4 (2015).  
pdfPaper pdfSupporting Material
187. A. Konar, V.V. Lozovoy, and M. Dantus, "Solvent Environment Revealed by Positively Chirped Pulses," *J. Phys. Chem. Lett.* 5, 924–928 (2014).  
pdfPaper pdfSupporting Material
186. D. Pestov, A. Ryabtsev, G. Rasskazov, V.V. Lozovoy, and M. Dantus, "Real-time single-shot measurement and correction of pulse phase and amplitude for ultrafast lasers," *Opt. Eng.* 53, 051511 (2014).
185. M. Dantus and C.L. Kalcic, "Ultrafast Ionization and Fragmentation: From Small Molecules to Proteomic Analysis", *Ultrafast Phenomena in Molecular Sciences*, R. Nalda and L. Banares, Eds. (Springer Series in Chemical Physics 107, 2014) p. 171-201
184. S.Y. Nof, G.J. Cheng, A.M. Weiner, X.W. Chen, A. Bechar, M.G. Jones, C.B. Reed, A. Donmez, T.D. Weldon, P. Bermel, S.T.S. Bukkapatnam, C. Cheng, S.R.T. Kumara, A. Bement, R. Koubek, B. Bidanda, Y.C. Shin,, A. Capponi, S. Lee, M.R. Lehto, A.L. Liu, O. Nohadani, M. Dantus, P.W. Lorraine,, D.D. Nolte, R.W. Proctor, H.P. Sardesai, L. Shi, J.P. Wachs,X.-C. Zhang, "Laser and photonic systems integration: Emerging innovations and framework for research and education", *Human Factors and Ergonomics In Manufacturing* 23, 483-516 (2013).

## M. Dantus Publications

183. R.M. Bowman, M. Dantus, A.H. Zewail, Jennifer L. Herek, “Historical perspective on: Femtosecond transition-state spectroscopy of iodine—From strongly bound to repulsive surface dynamics”, *Chem Phys Lett* **589**, 42-45 (2013).
182. B. Nie, G.Parker, V.V.Loizovoy and M. Dantus, “Energy scaling of Yb fiber oscillator producing clusters of femtosecond pulses”, *Optical Engineering* **53**, 051505 (2013).
181. A. Ryabtsev, B. Nie and M. Dantus, “45 fs optical pulses from phase corrected broadband cascaded four wave mixing products”, *Laser Phys. Lett.* **10**, 125109 (2013).
180. M. T. Bremer and M. Dantus, “Standoff explosives trace detection and imaging by selective stimulated Raman scattering”, *Appl. Phys. Lett.* **103**, 061119 (2013).
179. G. Rasskazov, A. Ryabtsev, D. Pestov, B. Nie, V.V. Loizovoy and M. Dantus, “Anomalous laser-induced group velocity dispersion in fused silica”, *Optics Express* **21**, 17695-17700 (2013).
178. A. Konar, J.-D. Shah, V.-V. Loizovoy and M. Dantus, “Optical response of fluorescent molecules studied by synthetic femtosecond laser pulses”, XVIIIth International Conference on Ultrafast Phenomena **41**, 07017 (2013).
177. D. Pestov, G. Rasskazov, A. Ryabtsev, I. Pastirk and M. Dantus, “Shaper-based approach to real-time correction of ultrashort pulse phase drifts and transient pulse dispersion measurements”, XVIIIth International Conference on Ultrafast Phenomena **41**, 11007 (2013).
176. A. Konar, V. V. Loizovoy and M. Dantus, “Solvation Stokes-Shift Dynamics Studied by Chirped Femtosecond Laser Pulses”, *Journal of Physical Chemistry Letters* **3**, 2458–2464 (2012).
175. O. Yue, M. Bremer, D. Pestov, J. R. Gord, S. Roy, and M. Dantus, “Gas Phase Thermometry via Multi-Time-to-Frequency Mapping of Coherence Dephasing”, *J. Phys. Chem. A* **116**, 8138–8141, (2012)
174. B. Nie, I. Saytashev, A. Chong, H. Liu, S. Arkhipov, F. Wise and M. Dantus “Multimodal microscopy with sub-30 fs Yb fiber laser oscillator”, *Biomedical Optics Express* **3**, 1750-1756 (2012).
173. I. Saytashev, S. Arkhipov, N. Winkler, K. Zuraski, V. V. Loizovoy and M. Dantus “Pulse duration and energy dependence of photodamage and lethality induced by femtosecond near infrared laser pulses in *D. melanogaster*”, *Journal of Photochemistry and Photobiology B: Biology* **115**, 42–50 (2012).
172. I. Saytashev, B. Nie, A. Chong, H. Liu, S. Arkhipov, F. Wise and M. Dantus “Multiphoton imaging with sub-30 fs Yb fiber laser”, *Proc. SPIE* **8226**, 82261I (2012).
171. M. Bremer, V. V. Loizovoy and M. Dantus “Nondestructive detection and imaging of trace chemicals with high-chemical specificity using single-beam coherent anti-stokes Raman scattering in a standoff configuration”, *Proc. SPIE* **8358**, 835818 (2012).
170. Chong, A.; Liu, H.; Nie, B.; Gale, B.G.; Wabnitz, S.; Renninger, W.H.; Dantus, M.; Wise, F. W.; “Pulse generation without gain-bandwidth limitation in a laser with self-similar evolution”, *Optics Express* **20**, 14213-14220 (2012).
169. A. Konar, J. Shah, V. V. Loizovoy and M. Dantus, “Optical Response of Fluorescent Molecules Studied by Synthetic Femtosecond Laser Pulses”, *Journal of Physical Chemistry Letters* **3**, 1329–1335 (2012).
168. C. Kalcic, G. Reid, V. V. Loizovoy and M. Dantus, “Mechanism Elucidation for Nonstochastic Femtosecond Laser-Induced Ionization/Dissociation: From Amino Acids to Peptides”, *Journal of Physical Chemistry A* **116**, 2764-2774 (2012).
167. Pestov, D.; Xu, B.; Li, H.; Dantus, M.; “Delivery and characterization of sub-8fs laser pulses at the imaging plane of a two-photon microscope”, *Proc. SPIE* **7903**, 79033B (2011).
166. Nie, B.; Pestov, D.; Wise, F. W.; Dantus, M.; “An Ultrafast Fiber Laser with Self-Similar Evolution in the Gain Segment”, *Optics and Photonics News* **22**, 47 (2011).
165. P. Devi, V. V. Loizovoy and M. Dantus, “Measurement of Group Velocity Dispersion of Solvents Using 2-cycle Femtosecond Pulses: Experiment and Theory”, *AIP Advances* **1**, 032166 (2011).
164. M. Bremer, P. Wrzesinski, N. Butcher, V. V. Loizovoy and M. Dantus, “Highly Selective Standoff Detection and Imaging of Trace Chemicals in a Complex Background using Single-Beam Coherent Anti-Stokes Raman Scattering”, *Applied Physics Letters* **99**, 101109 (2011).
163. Nie, B.; Pestov, D.; Wise, F. W.; Dantus, M.; “Generation of 42-fs and 10-nJ pulses from a fiber laser with self-similar evolution in the gain segment”, *Optics Express* **19**, 12074-12080 (2011).
162. P. Wrzesinski, D. Pestov, V. V. Loizovoy, J. R. Gord, M. Dantus, and S. Roy, “Group-velocity-dispersion measurements of atmospheric and combustion-related gases using an ultrabroadband-laser source”, *Optics Express* **19**, 5163-5170 (2011)
161. P. Wrzesinski, D. Pestov, V. V. Loizovoy, B. Xu, S. Roy, J. R. Gord, and M. Dantus, “Binary phase shaping for selective single-beam CARS spectroscopy and imaging of gas-phase molecules”, *J. Raman Spec.* **42**, 393-398 (2011)

## M. Dantus Publications

160. Christian W. Freudiger, Wei Min, Gary R. Holtom, Bingwei Xu, Marcos Dantus and X. Sunney Xie “Highly specific label-free molecular imaging with spectrally tailored excitation-stimulated Raman scattering (STE-SRS) microscopy”, *Nature Photonics* **5**, 103–109 (2011).
159. A. Palumbo, S. Smith, C. Kalcic, M. Dantus, P. Stemmer and G. Reid “Tandem Mass Spectrometry Strategies for Phosphorproteome Analysis”, *Mass Spectrometry Reviews* **30**, 600-625 (2011).
158. X. Zhu, V. V. Lozovoy, J. D. Shah and M. Dantus, “Photodissociation dynamics of acetophenone and its derivatives with intense nonresonant femtosecond pulses,” *J. Phys. Chem. A* **115**, 1305–1312 (2011).
157. P. Wrzesinski, D. Pestov, V. V. Lozovoy, S. Roy, J. R. Gord and M. Dantus “Single-beam CARS Imaging for Reacting Flow Diagnostics” *Optics and Photonics News* **21**, 49 (2010).
156. S. Smith, C. Kalcic, K. Safran, P. Stemmer, M. Dantus, and G. Reid “Enhanced Characterization of Singly Protonated Phosphopeptide Ions by Femtosecond Laser-induced Ionization/Dissociation Tandem Mass Spectrometry (fs-LID-MS/MS)”, *Journal of the American Society for Mass Spectrometry* **12**, 2031-2040 (2010).
155. X. Zhu, C. Kalcic, N. Winkler, V. V. Lozovoy, and M. Dantus, “Applications of Femtochemistry to Proteomic and Metabolomic Analysis”, *J. Phys. Chem. A*, **114**, 10380–10387 (2010).
154. D. Pestov, Y. Andegeko, V. V. Lozovoy and M. Dantus, “Photobleaching and photoenhancement of endogenous fluorescence observed in two-photon microscopy with broadband laser sources”, *J. Opt.* **12**, 084006 (2010).
153. D. Pestov, Y. Andegeko, V. V. Lozovoy and M. Dantus, “Pulse shaping for reducing photodamage in multiphoton microscopy,” *Proc. SPIE* **7569**, 756926 (2010); doi:10.1117/12.852289.
152. Y. Coello, A. D. Jones, T. C. Gunaratne, and M. Dantus “Atmospheric pressure femtosecond laser imaging mass spectrometry” *Anal. Chem.* **82**, 2753-2758 (2010).
151. M. Dantus “Removing the applications bottleneck for ultrafast lasers”, *Laser+Photonics* **01-2010**, 18-21 (2010).
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3. L. W. Peng, M. Dantus, A. H. Zewail, K. Kemnitz, J. M. Hicks, and K. B. Eisenthal, "Stepwise Solvation of the Intramolecular-Charge-Transfer Molecule P-(Dimethylamino)Benzonitrile," *Journal of Physical Chemistry* **91**, 6162-6167 (1987).
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Marcos Dantus		Intellectual Property Portfolio	as of February 27, 2018
Issued Patents			
	PAT. NO.	Title	
1	9,202,678	Ultrafast laser system for biological mass spectrometry	
2	9,048,632	Ultrafast laser apparatus	
3	9,018,562	Laser material processing system	
4	8,861,075	Laser amplification system	
5	8,675,699	Laser pulse synthesis system	
6	8,633,437	Ultra-fast laser system (Raman and Remote Sensing)	
7	8,630,322	Laser system for output manipulation (MIIPS 3)	
8	8,618,470	Laser based identification of molecular characteristics (enantiomer detection)	
9	8,311,069	Direct ultrashort laser system	
10	8,300,669	Control system and apparatus for use with ultra-fast laser	
11	8,265,110	Laser and environmental monitoring method	
12	8,208,505	Laser system employing harmonic generation	
13	8,208,504	Laser pulse shaping system	
15	8,185,209	Methods to extend vision to infrared wavelengths	
16	7,973,936	Control system and apparatus for use with ultra-fast laser	
17	7,609,731	Laser system using ultra-short laser pulses	
18	7,583,710	Laser and environmental monitoring system	
19	7,567,596	Control system and apparatus for use with ultra-fast laser	
20	7,450,618	Laser system using ultrashort laser pulses	
21	7,439,497	Control system and apparatus for use with laser excitation and ionization	
22	7,105,811	Control system and apparatus for use with laser excitation of ionization	
23	6,119,567	Method and apparatus for producing a shaped article	
24	EP1,723,704	Laser system using ultra-short laser pulses (Europe)	
25	JP60048	Laser system using ultra-short laser pulses (Japan)	

**Pending US Patent Applications**

	PUB. APP. NO.	Title	
1	20180267072	LASER SYSTEM FOR MEASURING FLUID DYNAMICS	
2	20180219346	LASER PULSE INCLUDING A FLAT TOP	
3	20170122855	MATERIALS WITH DETECTABLE COMPRESSION MEMORY	
4	20170089779	MATERIALS AND APPARATUS WITH MULTIPLE IMPACT LEVEL AND TORQUE DETECTION	
5	20160169806	LASER SYSTEM FOR STANDOFF DETECTION	
6	20150157209	BIOMEDICAL DETECTION APPARATUS	
7	20140058367	ADAPTIVE LASER SYSTEM FOR OPHTHALMIC USE	
8	20120147911	DIRECT ULTRASHORT LASER SYSTEM	
9	20120076504	LASER AMPLIFICATION SYSTEM	
10	20100187208	LASER PULSE SYNTHESIS SYSTEM	
11	20100123075	ULTRAFAST LASER SYSTEM FOR BIOLOGICAL MASS SPECTROMETRY	
12	20090257464	CONTROL SYSTEM AND APPARATUS FOR USE WITH ULTRA-FAST LASER	
13	20090256071	LASER AND ENVIRONMENTAL MONITORING METHOD	
14	20090238222	LASER SYSTEM EMPLOYING HARMONIC GENERATION	
15	20090216299	System for Low-Level Laser Radiation	
16	20090207869	LASER PLASMONIC SYSTEM	
17	20090188901	Laser Material Processing System	
18	20090122819	Laser Pulse Shaping System	

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19	20080170218	Ultra-Fast Laser System
20	20060187974	Control system and apparatus for use with ultra-fast laser
21	20060056468	Control system and apparatus for use with ultra-fast laser
22	20050232317	Control system and apparatus for use with laser excitation and ionization
23	20050021243	Laser and environmental monitoring system
24	20040233944	Laser system using ultra-short laser pulses
25	20040089804	Control system and apparatus for use with laser excitation or ionization
26	20030099264	Laser system using ultrashort laser pulses

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**Pending International Patent Applications**

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	<b>Ctr</b>		<b>Title</b>	<b>Appl.No</b>
1	WO	WO/2012/135073	ADAPTIVE LASER SYSTEM FOR OPHTHALMIC USE	PCT/US2012/030476
2	EP	2341587	LASER SYSTEM using ultrashort LASER pulses	11158256
3	WO	WO/2010/141128	HIGH PEAK INTENSITY LASER AMPLIFICATION SYSTEM AND ASSOCIATED METHOD	PCT/US2010/025564
4	EP	2232653	PHASE CONTROL IN ultrashort LASER SYSTEMS BY A DEFORMABLE MIRROR IN THE STRETCHER	8867550
5	EP	2211430	LASER autocorrelation SYSTEM	10151433
6	EP	2089767	LASER SYSTEM EMPLOYING HARMONIC GENERATION	7862112
7	WO	WO/2009/086122	CONTROL IN ultrashort LASER SYSTEMS BY A DEFORMABLE MIRROR IN THE STRETCHER	PCT/US2008/087707
8	WO	WO/2008/063602	LASER SYSTEM EMPLOYING HARMONIC GENERATION	PCT/US2007/024171
9	EP	1905060	CONTROL SYSTEM AND APPARATUS FOR USE WITH ULTRA-FAST LASER	6786531
10	WO	WO/2008/011059	LASER PLASMONIC SYSTEM	PCT/US2007/016274
11	WO	WO/2007/145702	LASER MATERIAL PROCESSING SYSTEMS AND METHODS WITH, IN PARTICULAR, USE OF A HOLLOW WAVEGUIDE FOR BROADENING THE BANDWIDTH OF THE PULSE ABOVE 20 NM	PCT/US2007/008878
12	EP	1851532	ULTRA-FAST LASER SYSTEM	6735004
13	EP	1782452	LASER AND ENVIRONMENTAL MONITORING SYSTEM	5858023
14	WO	WO/2007/028119	CONTROL SYSTEM AND APPARATUS FOR USE WITH ULTRA-FAST LASER	PCT/US2006/034408
15	WO	WO/2007/008615	CONTROL SYSTEM AND APPARATUS FOR USE WITH ULTRA-FAST LASER	PCT/US2006/026406
16	WO	WO/2007/001308	LASER AND ENVIRONMENTAL MONITORING SYSTEM	PCT/US2005/023353
17	EP	1723704	LASER SYSTEM using ULTRA-SHORT LASER pulses	5723597
18	WO	WO/2006/108093	A SYSTEM FOR LOW-LEVEL LASER RADIATION	PCT/US2006/012793
19	WO	WO/2006/088841	ULTRA-FAST LASER SYSTEM	PCT/US2006/005129
20	WO	WO/2005/088783	LASER SYSTEM using ULTRA-SHORT LASER pulses	PCT/US2005/005784
21	EP	1556930	LASER SYSTEM using ultrashort LASER pulses	3759690
22	WO	WO/2004/034524	LASER SYSTEM using ultrashort LASER pulses	PCT/US2003/031374
23	WO	WO/2002/061799	CONTROL SYSTEM AND APPARATUS FOR USE WITH LASER EXCITATION OR	PCT/US2002/002548

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