

MATTHIEU BAUDELET

Senior Research Scientist, Townes Laser Institute

College of Optics & Photonics, CREOL, University of Central Florida, Orlando, FL 32816, USA

Matthieu BAUDELET graduated his B.S. in Physics in the University of Lille (France) in 2003, starting his experience in Spectroscopy with Fourier-Transform Microwave Spectroscopy. In 2005, he graduated his M.S. in "Laser and Spectroscopy" in the University of Lyon (France) and continued to complete his Ph.D. in the 'Laboratoire de Spectrométrie Ionique et Moléculaire' (Lasim, Lyon) working on "Laser-induced plasma and spectroscopic analysis" under the direction of Pr. Jin YU. He showed the advantages of LIBS for biological sensing and food monitoring and wrote publications on the use of femtosecond pulses to improve this technique and the development of analytical techniques to understand and extract the maximum of information from the LIBS spectrum of bacteria.

He is now continuing his research on laser spectroscopy and sensing as a Senior Research Scientist for the Townes Laser Institute at the University of Central Florida (Orlando, FL). His panel covers the fundamentals of laser-induced plasmas, the application of laser spectroscopies such as LIBS, Fluorescence, Raman, FTIR, ... as fundamental diagnostics as well as sensing techniques for defense, industrial, environmental, biomedical applications and the study of propagation of ultrashort laser pulses for sensing purposes at distances up to the kilometer range.

POSITIONS

- 2008-present Senior Research Scientist (Townes Laser Institute, University of Central Florida, FL, USA)
Laser Spectroscopy and Sensing
Filamentation and Engineered Propagation
- 2005-2008 Teaching assistant (University of Lyon, France)
Electrokinetics
Numerical Analysis in C and C++
- 2005-2008 Graduate Research Assistant (LASIM, University of Lyon, France)

FORMATION

- 2005-2008 PhD thesis *Plasma spectroscopy* "Physical-chemical properties of laser-induced plasmas in nanosecond and femtosecond regimes: Analytical applications to bacteria and food samples" (Advisor: Pr. Jin Yu, LASIM, Lyon, France)
- 2003-2005 M. Sc. *Physics and Technologies* (University of Lyon, France)
- 2000-2003 B. Sc. *Physics* (University of Lille I, France)

PROFESSIONAL SOCIETIES MEMBERSHIP

- 2012-present Secretary of the North-American Society of Laser-Induced Breakdown Spectroscopy
- 2011-present Member of the Society of Applied Spectroscopy
- 2010-1011 Member of the Optical Society of America
- 2008-2009 Member of SPIE

SYNERGISTIC ACTIVITIES

- 2012-2014 Associate Editor of *Optics and Laser Technology* (Elsevier)
- 2012 Session chair for SciX 2012 (Elemental Signatures for Forensics)
- 2012 Section chair for SciX 2012 (Laser-Induced Breakdown Spectroscopy)
- 2011 Session chairman “Quantitative Analysis” for North-American Symposium on Laser-Induced Breakdown Spectrometry 2011
- 2010-present Manager of LinkedIn group on “Laser-Induced Breakdown Spectroscopy”
- 2006-present Peer-reviewer for:
- Analytical and Bioanalytical Chemistry
 - Analytical Chemistry
 - Applied Optics
 - Applied Physics B
 - Applied Spectroscopy
 - Chemical Physics Letters
 - Current Applied Physics
 - Journal of Analytical Atomic Spectroscopy
 - Journal of Physics: Conference Series
 - Journal of Optics and Laser Technologies
 - Materials Today
 - Optics and Lasers in Engineering
 - Sensors and Actuators B
 - Spectrochimica Acta Part B
 - Surface Science Reports
 - Technology and Innovation, Proceedings of the National Academy of Inventors
- 2007 Member of the organizing committee of the “2nd France-China Workshop on Intense Lasers and Applications”
- 2006-2008 Organizer of the LASIM PhD students seminars

PEER-REVIEWED PUBLICATIONS

2012

1. Caitlin N Rinke, Mary R Williams, Christopher Brown, Matthieu Baudelet, Martin Richardson, Michael E. Sigman, “Discriminant Analysis in the Presence of Interferences: Combined Application of Target Factor Analysis and a Bayesian Soft-Classifier”, submitted for publication to *Analytica Chimica Acta* (2012)
2. Harby E Ahmed, Yuan Liu, Bruno Bousquet, Matthieu Baudelet, Martin Richardson, “Investigation of Historical Egyptian Textile using Laser-Induced Breakdown Spectroscopy (LIBS), a case study”, submitted for publication to *Journal of Cultural Heritage* (2012)
3. Yuan Liu, Lionel Gigant, Matthieu Baudelet, Martin Richardson, “Moisture monitoring in cheese using Laser-Induced Breakdown Spectroscopy”, submitted for publication to *Spectrochimica Acta B* (2012)
4. Yuan Liu, Bruno Bousquet, Matthieu Baudelet, Martin Richardson, “Improvement of the sensitivity for the measurement of copper concentrations in soil by Microwave-Assisted Laser-

Induced Breakdown Spectroscopy”, *Spectrochimica Acta B* DOI:10.1016/j.sab.2012.06.041 (2012)

5. Matthew Weidman, Khan Lim, Mark Ramme, Magali Durand, Matthieu Baudelet, Martin Richardson, “Stand-off filament-induced ablation of gallium arsenide”, *Applied Physics Letters* **101**, xxxx-xxxx (2012)

2011

6. Nicholas Barbieri, Matthew Weidman, Gregory Katona, Matthieu Baudelet, Zachary Roth, Eric Johnson, Georgios Siviloglou, Demetrios Christodoulides, Martin Richardson, “Double helical laser beams based on interfering first order Bessel beams”, *Journal of the Optical Society of America A* **28**, 1462-1469 (2011)

2010

7. Yuan Liu, Matthieu Baudelet, Martin Richardson, “Elemental analysis by microwave-assisted laser-induced breakdown spectroscopy: Evaluation on ceramics”, *J. Anal. At. Spectrom.* **25**, 1316-1323 (2010)
8. Matthieu Baudelet, Christina C.C. Willis, Lawrence Shah, Martin Richardson, “Laser-induced breakdown spectroscopy of copper with a 2 μm thulium fiber laser”, *Optics Express* **18**, 7905-7910 (2010)
9. Matthew Weidman, Matthieu Baudelet, Santiago Palanco, Michael Sigman, Paul J. Dagdigian, Martin Richardson "Nd:YAG-CO₂ double-pulse laser induced breakdown spectroscopy of organic films" *Optics Express* **18**, 259-266 (2010)

2009

10. Matthew Weidman, Santiago Palanco, Matthieu Baudelet, Martin C. Richardson, "Thermodynamic and spectroscopic properties of Nd:YAG-CO₂ Double-Pulse Laser-Induced Plasma of Iron," *Spectrochimica Acta Part B* **64** (2009) 961–967
11. Myriam Boueri, Matthieu Baudelet, Jin Yu, X. L. Mao, S. S. Mao, R. E. Russo, "Early stage expansion and time-resolved spectral emission of laser-induced plasma from polymer," *Applied Surface Science* **255**, issue 24, pages 9566-9571 (2009)

2008

12. Vincent Juvé, Richard Portelli, Myriam Boueri, Matthieu Baudelet, Jin Yu, "Space-resolved analysis of trace elements in fresh vegetables using UV nanosecond laser-induced breakdown spectroscopy," *Spectrochimica Acta Part B* **63**, pages 1047-1053 (2008)

2007

13. Myriam Bossu, Zuo-Qiang Hao, Matthieu Baudelet, Jin Yu, Zhe Zhang, Jie Zhang, "Femtosecond Laser-Induced Breakdown Spectroscopy for Detection of Trace Elements in Sophora Leaves," *Chinese Physics Letters* **24**, number 12, pages 3466-3469 (2007)
14. Matthieu Baudelet, Myriam Boueri, Jin Yu, S. S. Mao, Vincent Piscitelli, X. L. Mao, R. E. Russo, "Time-resolved ultraviolet laser-induced breakdown spectroscopy for organic material analysis," *Spectrochimica Acta Part B* **62**, pages 1329-1334 (2007)

2006

15. Matthieu Baudelet, Jin Yu, Myriam Bossu, Julien Jovelet, Jean-Pierre Wolf, Tanguy Amodeo, Emeric Fréjafon, Patrick Laloi, "Discrimination of microbiological samples using femtosecond laser- induced breakdown spectroscopy," *Applied Physics Letters* **89**, page 163903 (2006)

16. Matthieu Baudelet, Laurent Guyon, Jin Yu, Jean-Pierre Wolf, Tanguy Amodeo, Emeric Fréjafon, Patrick Laloi, "Femtosecond time-resolved laser-induced breakdown spectroscopy for detection and identification of bacteria: A comparison to the nanosecond regime," *Journal of Applied Physics* **99**, page 084701 (2006)
17. Matthieu Baudelet, Laurent Guyon, Jin Yu, Jean-Pierre Wolf, Tanguy Amodeo, Emeric Fréjafon, Patrick Laloi, "Spectral signature of native CN bonds for bacterium detection and identification using femtosecond laser-induced breakdown spectroscopy," *Applied Physics Letters* **88**, page 063901 (2006)

2003

18. D Gerhard, A. Hellweg, I. Merke, W. Stahl, Matthieu Baudelet, Denis Petitprez, Georges Wlodarczak, "Internal rotation and chlorine nuclear quadrupole coupling of o-chlorotoluene studied by microwave spectroscopy and ab initio calculations," *Journal of Molecular Spectroscopy* **220**, pages 234-241 (2003)

PATENTS

1. Jin Yu, Matthieu Baudelet, "Unité d'excitation lumineuse d'un échantillon et de collection de la lumière émise par ledit échantillon excité" Patent FR 09 50454
2. Matthieu Baudelet, Jin Yu, "Détection de métaux dans les produits agroalimentaires" Patent FR 06 51720

CONFERENCE PROCEEDINGS

2012

1. C. Butler, S. Fardad, A. Sincore, M. Vangheluwe, M. Baudelet, M. Richardson, "Multispectral optical tweezers for molecular diagnostics of single biological cells"; *Proceedings of SPIE*, volume 8225, pages 82250C (2012)
2. Q. L. Ma, V. Motto-Ros, W. Q. Lei, X. C. Wang, M. Boueri, F. Laye, C. Q. Zeng, M. Sausy, A. Wartelle, X. S. Bai, L. J. Zheng, H. P. Zeng, M. Baudelet, J. Yu, "Characteristics of laser-induced plasma as a spectroscopic light emission source", The 17th international conference on atomic processes in plasmas (ICAPIP), *AIP Conference Proceedings* **1438**, 243-248 (2012)

2010

3. M. Baudelet, Y. Liu, and M. Richardson, "Microwave-Assisted LIBS: Towards a New Tool for Trace Element Detection and Molecular Plasma Spectrochemistry,"; *Laser Applications to Chemical, Security and Environmental Analysis*, OSA Technical Digest Series (CD) (Optical Society of America, 2010), paper LWC3P
4. M. Baudelet, C. Willis, L. Shah, and M. Richardson, "Tm-Fiber 2 μ m Laser for Laser-Induced Plasma Spectroscopy of Organic and Biological Materials," in *Laser Applications to Chemical, Security and Environmental Analysis*, OSA Technical Digest Series (CD) (Optical Society of America, 2010), paper LWC2.
5. M. Weidman, M. Baudelet, M. E. Sigman, P. J. Dagdigian, and M. Richardson, "Nd:YAG-CO₂ Double-Pulse Laser Induced Breakdown Spectroscopy for Explosive Detection," in *Laser Applications to Chemical, Security and Environmental Analysis*, OSA Technical Digest Series

(CD) (Optical Society of America, 2010), paper LWD3.

- Christina C. C. Willis, Lawrence Shah, Matthieu Baudelet, Pankaj Kadwani, Timothy S. McComb, R. Andrew Sims, Vikas Sudesh, Martin Richardson, "High-energy Q-switched Tm³⁺-doped polarization maintaining silica fiber laser", Proceedings of SPIE, volume 7850, pages 785003-1 (2010)

2009

- Matthieu Baudelet, Martin C. Richardson, Michael Sigman, "Self-channeling of femtosecond laser pulses for rapid and efficient standoff detection of energetic materials," Proceedings of IEEE Conference on Technologies for Homeland Security, pages 472-476 (2009)
- Christopher G. Brown, Matthieu Baudelet, Candice Bridge, Matthew Fisher, Michael Sigman, Paul J. Dagdigian, Martin C. Richardson, "Atmosphere Issues in Detection of Explosives and Organic Residues," Proceedings of SPIE, volume 7304, pages 73041D-1 (2009)
- Matthew Weidman, Matthieu Baudelet, S. Fischer, Candice Bridge, Christopher G. Brown, Michael Sigman, Paul J. Dagdigian, Martin C. Richardson, "Molecular signal as a signature for detection of energetic materials in filament-induced breakdown spectroscopy," Proceedings of SPIE, volume 7304, pages 73041G-1 (2009)
- James Martin, Matthieu Baudelet, Matthew Weidman, Matthew Fisher, Candice Bridge, Christopher G. Brown, Michael Sigman, Paul J. Dagdigian, Martin C. Richardson, "Stand-off detection of organic samples using filament-induced breakdown spectroscopy," Proceedings of SPIE, volume 7306, pages 73060Z-1 (2009)
- Matthieu Baudelet, Myriam Boueri, Jin Yu, X. L. Mao, S. S. Mao, R. E. Russo, "Laser ablation of organic materials for discrimination of bacteria in an inorganic background," Proceedings of SPIE, volume 7214, pages 72140J-1 (2009)

2008

- Matthieu Baudelet, Myriam Boueri, Jin Yu, S. S. Mao, X. L. Mao, R. E. Russo, "Correlation between early-stage expansion and spectral emission of a nanosecond laser-induced plasma from organic material," Proceedings of SPIE, volume 7005 (2008)

2007

- Laurent Guyon, Matthieu Baudelet, Tanguy Amodeo, Emeric Frejafon, Patrick Laloi, Jin Yu, Jean-Pierre Wolf, "Laser-Induced Breakdown Spectroscopy analysis of Bacteria: What Femtosecond Lasers Make Possible," Ultrafast Phenomena XV, Proceedings of the 15th International Conference, Springer Berlin Heidelberg (2007), volume 88, pages 193-195 (2007)

PRESS RELEASES

2012

- Yuan Liu, Matthieu Baudelet, Martin Richardson, "Moisture Measurement Using LIBS", G.I.T. Laboratory Journal Europe (June, 2012)
<http://www.laboratory-journal.com/science/chemistry-physics/moisture-measurement-using-libs>

2010

- Andy Whitehouse, Ken Kaufman, Matthieu Baudelet and Rob Morris, "Optics and Lasers", Discussion hosted by Spectroscopy Online (10/08, 2010)

<http://spectroscopyonline.findanalytichem.com/spectroscopy/article/articleDetail.jsp?id=690503>

3. Matthieu Baudelet, “Basic Principles of Laser-Induced Breakdown Spectroscopy”, Webcast hosted by Spectroscopy Online (09/29, 2010)
<http://www.youtube.com/watch?v=6AfZm0O7VIs>
4. Jin Yu, Matthieu Baudelet, “Spectroscopy detects toxins in veggies”, Photonics Spectra (February 2010)
<http://www.photonics.com/Article.aspx?AID=41333>

2009

5. Jin Yu, Matthieu Baudelet, “First direct measurements of trace pollutants in fresh vegetables using laser plasma spectroscopy”, News from Andor Technology (2009)
<http://www.andor.com/company/news/?docID=1021>

2008

6. Jin Yu, Myriam Boueri, Vincent Motto-Ros, Matthieu Baudelet, Wenqi Lei, "Laser-induced plasma for detecting trace elements in biological materials," SPIE Newsroom (2008)
<http://spie.org/x31802.xml?ArticleID=x31802>

ORAL PRESENTATIONS AND POSTERS

2012

1. Martin Richardson, Matthieu Baudelet, Michael Sigman and Andrzej Miziolek, “Laser-based Stand-off Sensing Technologies”, Frontiers in Optics 2012, Laser Science XXVIII; Rochester, NY, USA; 10/14-18, 2012; *Invited talk*
2. K. Lim, R. S. Shankar, M. Baudelet, T. Seideman, M. Richardson, “Molecular Studies of filamentation in carbon dioxide”, COFIL 2012; Tucson, AZ, USA; 10/12, 2012. *Poster presentation*
3. K. Lim, B. Bousquet, M. Weidman, M. Baudelet, M. Richardson, “Broadband terahertz detection with laser-induced air plasma in counter-propagating scheme”, COFIL 2012; Tucson, AZ, USA; 10/11, 2012. *Poster presentation*
4. N. Barbieri, M. Weidman, M. Baudelet, Z. Roth, E. Johnson, G. Siviloglou, D. Christodoulides, M. Richardson, “Helical plasma filaments”, COFIL 2012; Tucson, AZ, USA; 10/08, 2012. *Poster presentation*
5. N. Barbieri, M. Weidman, K. Lim, M. Baudelet, R. Bernath, M. Richardson, “RF emission from filament-matter interaction”, COFIL 2012; Tucson, AZ, USA; 10/08, 2012. *Poster presentation*
6. M. Weidman, K. Lim, M. Ramme, M. Baudelet, A. Valenzuela, C. Munson, M. Richardson, “Quantitative characterization of ablative filament matter interaction”, COFIL 2012; Tucson, AZ, USA; 10/08, 2012. *Poster presentation*
7. Martin Richardson, Jean-Claude Diels, Alejandro Aceves, Ladan Arissian, Matthieu Baudelet, Eric Johnson, Zenghu Chang, Natalia Litchinitser, Tamar Seideman, Xie-Cheng Zhang, Richard Hammond, “The ARO MURI Program on Air Filamentation Science”, COFIL 2012; Tucson, AZ, USA; 10/08, 2012. *Invited talk*
8. Martin Richardson, Matthieu Baudelet, Michael Sigman and Andrzej Miziolek, “Stand-off LIBS – The status today and the future”, LIBS 2012; Luxor, Egypt; 09/29 – 10/04, 2012;

Invited talk

9. Yuan Liu, Matthieu Baudelet, Martin Richardson, “Microwave-assisted LIBS: Signal enhancement and beyond”, SciX 2012; Kansas City, MO, USA; 10/02, 2012. *Invited talk*
10. Matthieu Baudelet, “Fifty years of LIBS and no limits for analysis”, SciX 2012; Kansas City, MO, USA; 10/02, 2012. *Invited talk*
11. Martin Richardson, Jean-Claude Diels, Alejandro Aceves, Ladan Arissian, Matthieu Baudelet, Eric Johnson, Zenghu Chang, Natalia Litchinitser, Tamar Seideman, Xie-Cheng Zhang, Richard Hammond, “The ARO MURI Program on Air Filamentation Science After One Year”, 10th annual ultrashort pulse laser workshop, Directed Energy Professional Society; Broomfield, CO, USA; 06/12, 2012. *Invited talk*
12. Yuan Liu, Matthieu Baudelet, Martin Richardson, “Laser-Induced Breakdown Spectroscopy for Moisture Monitoring in Food”; Pittcon 2012, Orlando, FL, USA; 03/11, 2012
13. Corey Butler, Shima Fardad, Alex Sincore, Matthieu Baudelet, Martin Richardson “Multispectral optical tweezers for molecular diagnostics of single biological cells”; Pittcon 2012, Orlando, FL, USA; 03/12, 2012.
14. Yuan Liu, Mark Koehler, Matthieu Baudelet, Martin Richardson, “Fusion of infrared and Raman spectroscopy for carotenoid analysis”; Pittcon 2012, Orlando, FL, USA; 03/11, 2012.
15. Corey Butler, Shima Fardad, Alex Sincore, Marie Vangheluwe, Matthieu Baudelet, Martin Richardson, “Multispectral optical tweezers for molecular diagnostics of single biological cells”; SPIE Photonics West; San Francisco, CA, USA; 01/21, 2012. *Invited talk*
16. Yuan Liu, Matthieu Baudelet, Martin Richardson, “Advanced LIBS Methodology for Food and Environment Monitoring”; 2012 Winter Conference on Plasma Spectrochemistry; Tucson, AZ, USA; 01/10, 2012. *Poster presentation*
17. Cheonha Jeon, Matthieu Baudelet, Martin Richardson, “Fundamental Time-Resolved Mass Spectrometry of Laser-Induced Plasmas for Organic Analysis”; 2012 Winter Conference on Plasma Spectrochemistry; Tucson, AZ, USA; 01/10, 2012.

2011

18. Matthieu Baudelet, Michael Sigman, Martin Richardson, “Laser-induced breakdown spectroscopy in complex situations”; FACSS 2011; Reno, NV, USA; 10/06, 2011. *Invited talk*
19. Yuan Liu, Matthieu Baudelet, Martin Richardson, Richard Russo “Advanced LIBS Methodologies for Food and Environment Monitoring”; Euro-Mediterranean Symposium on Laser-Induced Breakdown Spectroscopy 2011; Izmir, Turkey; 09/13, 2011
20. Matthieu Baudelet, Martin Richardson, Michael Sigman, “Laser spectroscopy and sensing at the Townes Laser Institute”; ATLANTIS-MILMI Summer School; Orlando, FL, USA; 07/21, 2011. *Invited talk*
21. Yuan Liu, Lionel Gigant, Matthieu Baudelet, Martin Richardson, “Combination of LIBS and Raman for Food Quality Monitoring”; North-American Symposium on Laser-Induced Breakdown Spectroscopy 2011; Clearwater, FL, USA; 07/20, 2011.
22. Yuan Liu, Matthieu Baudelet, Martin Richardson, “Laser Material Analysis using Calibration Free Laser-Induced Breakdown Spectroscopy”; North-American Symposium on Laser-Induced Breakdown Spectroscopy 2011; Clearwater, FL, USA; 07/19, 2011. *Poster presentation*
23. Matthew Weidman, Matthieu Baudelet, Martin Richardson, “Time-Resolved Goniometric

Measurement of the Filament-Induced Plasma Emission for Stand-Off LIBS Applications”; North-American Symposium on Laser-Induced Breakdown Spectroscopy 2011; Clearwater, FL, USA; 07/19, 2011. *Poster presentation*

24. Santiago Palanco, Jose Ramos-Barrado, Matthew Weidman, Matthieu Baudelet, Martin Richardson, “Correlation Between Spectral Emission and Nanoparticle Generation During Nano- and Femtosecond Laser-induced Breakdown”; North-American Symposium on Laser-Induced Breakdown Spectroscopy 2011; Clearwater, FL, USA; 07/18, 2011.
25. Caitlin Rinke, Chistopher Brown, Martin Richardson, Matthieu Baudelet, Michael Sigman, “LIBS signature recognition of trace materials in complex background environments”; North-American Symposium on Laser-Induced Breakdown Spectroscopy 2011; Clearwater, FL, USA; 07/18, 2011. *Invited talk*
26. Martin Richardson, Matthieu Baudelet, Demetrios Christodoulides, Robert Bernath, Matthew Fisher, Nicholas Barbieri, Matthew Weidman, Eric Johnson, Zachary Roth, “Engineered filaments”; 9th annual ultrashort pulse laser workshop, Directed Energy Professional Society; Santa Fe, NM, USA; 06/09, 2011.
27. Nicholas Barbieri, Matthew Weidman, Khan Lim, Gregory Katona, Matthieu Baudelet, Robert Bernath, Jason Aspiotis, Martin Richardson, “RF emission from filament induced laser plasmas”; 9th annual ultrashort pulse laser workshop, Directed Energy Professional Society; Santa Fe, NM, USA; 06/09, 2011.
28. Yuan Liu, Lionel Gigant, Matthieu Baudelet, Martin C. Richardson, “Combination of LIBS and Raman for food quality monitoring”; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/26, 2011.
29. Khan Lim, Jason M. Eichenholz, Matthieu Baudelet, Martin C. Richardson, “Far-UV LIBS for biological and organic samples”; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/25, 2011.
30. Khan Lim, Yuan Liu, Matthieu Baudelet, Evgueni Slobodtchikov, Peter Moulton, Andrzej W. Miziolek, Martin C. Richardson, “New generation of compact femtosecond system for laser-based detection and identification of biological materials”; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/25, 2011.
31. Nicholas Barbieri, Matthew Weidman, Matthieu Baudelet, Martin C. Richardson, Demetrios Christodoulides, Georgios Siviloglou, "Helical ionizing channels generated with ultrafast interfering Bessel laser pulses"; Photonics West; San Francisco, CA, USA; 01/26, 2011.

2010

32. Matthew Weidman, Matthieu Baudelet, Christina C. C. Willis, Lawrence Shah, Martin C. Richardson, "Novel laser sources for LIBS: From fiber lasers, self-channeled laser to dual pulse configuration,"; Pacificchem 2010; Honolulu, HI, USA; 12/18, 2010.
33. Yuan Liu, Matthieu Baudelet, Martin C. Richardson, "Microwave-assisted LIBS: Extending the laser induced plasma lifetime for trace detection" Pacificchem 2010; Honolulu, HI, USA; 12/18, 2010. *Poster presentation*
34. Matthew Weidman, Matthieu Baudelet, Martin C. Richardson, Paul J Dagdigian, "Spatial and temporal spectral imaging of self-channeled laser-induced breakdown spectroscopy on carbon-based samples: Molecular chemistry in air"; Pacificchem 2010; Honolulu, HI, USA; 12/18, 2010. *Poster presentation*

35. Martin Richardson, Michael Sigman, Matthieu Baudelet, "Standoff Detection of Trace Radio-Nuclides using New Laser Spectroscopy Techniques"; NNSA, University and Industry Technical Interchange (UITI2010) Review Meeting; Knoxville, TN, USA; 12/08, 2010
36. Matthew Weidman, Matthew Fisher, Khan Lim, Christopher Brown, Caitlin Rinke, Matthieu Baudelet, Michael Sigman, Martin Richardson, "Advanced LIBS Modalities for Stand-Off Detection of Explosive and Biological Threats"; 27th Army Science Conference; Orlando, FL, USA; 11/30, 2010.
37. Caitlin Rinke, Christopher G. Brown, Matthieu Baudelet, Martin C. Richardson, Michael Sigman, "A New Paradigm for Substrate Independent Discrimination of Organic and Explosive Materials by Target Factor Analysis of Molecular Optical Signatures"; 2010 Chemical and Biological Defense Science and Technology Conference; Orlando, FL, USA; 11/16, 2010. *Poster Presentation*
38. Yuan Liu, Matthieu Baudelet, Martin C. Richardson, "Compact Laser-based Spectroscopic Systems for Biological Analysis"; 2010 Chemical and Biological Defense Science and Technology Conference; Orlando, FL, USA; 11/16, 2010. *Poster Presentation*
39. Matthew Weidman, Matthieu Baudelet, Martin C. Richardson, "Stand-off Laser Sensing for Chemical and Biological Traces Detection"; 2010 Chemical and Biological Defense Science and Technology Conference; Orlando, FL, USA; 11/16, 2010. *Poster Presentation*
40. Danielle Simmons, Nathan Bodnar, Matthieu Baudelet, Martin Richardson, "Fourier Transform Infrared Spectroscopy"; Symposium on undergraduate research, Division of Laser Science of A.P.S - LS XXVI; Rochester, NY, USA; 10/25, 2010. *Poster Presentation*
41. Khan Lim, Matthieu Baudelet, Jason Eichenholz, Martin C. Richardson, "Far-UV LIBS for Biological and Organic Samples"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/16, 2010.
42. Yuan Liu, Matthieu Baudelet, Martin C. Richardson, "Elemental Analysis on Ceramic and Soil Samples Using Microwave-Assisted Laser-Induced Breakdown Spectroscopy"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/16, 2010. *Poster Presentation*
43. Matthew Weidman, Matthieu Baudelet, Paul J Dagdigian, Martin C. Richardson, "Temporally and Spatially Resolved Filament Induced Breakdown Spectroscopy of Carbon Based Samples"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/15, 2010. *Poster Presentation*
44. Khan Lim, Yuan Liu, Matthieu Baudelet, Evgueni Slobodtchikov, Peter Moulton, A Miziolek, Martin C. Richardson, "LIBS of Biological Materials with a Compact Femtosecond System"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/15, 2010. *Poster Presentation*
45. Yuan Liu, Matthieu Baudelet, Paul J Dagdigian, Martin C. Richardson, "Molecular Emission Enhancement from Microwave-Assisted Laser-Induced Breakdown Spectroscopy"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/15, 2010. *Poster Presentation*
46. Christopher G. Brown, Reuvani Devi Kamtaprasad, Matthieu Baudelet, Michael Sigman, Martin C. Richardson, "Stoichiometric Study of Organic Mass Limited Droplets"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/15, 2010. *Poster Presentation*

47. Martin C. Richardson, Matthieu Baudelet, Michael Sigman, "Fundamental Considerations for an Efficient Application of LIBS in Forensics and Security"; 6th International Conference on Laser-Induced Breakdown Spectroscopy; Memphis, TN, USA; 09/14, 2010. *Invited paper*
48. Qianli Ma, Vincent Motto-Ros, Wenqi Lei, Myriam Boueri, Matthieu Baudelet, Heping Zeng, Jin Yu, "Morphologie et évolution du plasma induit par laser dans un gaz ambiant"; Colloque commun de la division de Physique Atomique et Moléculaire et Optique de la SFP et des Journées de Spectroscopie Moléculaire; Orsay, France; 07/02, 2010.
49. Martin Richardson, Nicholas Barbieri, Matthew Weidman, Robert Bernath, Matthew Fisher, Matthieu Baudelet, Demetrios Christodoulides, Eric Johnson, Menelaos Poutous, and Zachary Roth, "Multi-structured air filamentation and interaction investigations"; DEPS Ultrashort Pulse Laser Workshop; Monterey, CA, USA; 06/13, 2010
50. Martin Richardson, Nicholas Barbieri, Matthew Weidman, Robert Bernath, Matthew Fisher, Matthieu Baudelet, Demetrios Christodoulides, Eric Johnson, Menelaos Poutous, and Zachary Roth, "Multi-structured air filamentation and interaction investigations"; 3rd International Symposium on Filamentation, (COFIL 2010); Aghia Pelaghia, Crete, Greece; 05/31. *Invited Talk*.
51. Robert A. Sims, Timothy S. McComb, Christina C.C. Willis, Pankaj Kadwani, Matthieu Baudelet Lawrence Shah, Martin C. Richardson, Dennis Killinger, Dzianis Pliutau, "Atmospheric Transmission Testing using a Portable, Tunable, High Power, Thulium Fiber Laser System", Conference on Lasers and Electro-Optics; San Jose, CA, USA; 05/20, 2010.
52. Matthew Weidman, Matthieu Baudelet, Michael Sigman, Martin C. Richardson, "Nd:YAG-CO₂ double-pulse laser-induced breakdown spectroscopy for explosive residues detection"; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/07, 2010.
53. Matthew Weidman, Matthieu Baudelet, Paul J Dagdigian, Michael Sigman, Martin C. Richardson, "Self-channeled laser-induced breakdown spectroscopy for detection of organic compounds in atmosphere via their molecular signature"; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/07, 2010.
54. Yuan Liu, Matthieu Baudelet, Martin C. Richardson, "Microwave-assisted laser-induced breakdown spectroscopy for trace detection in soil and food"; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/06, 2010.
55. Matthieu Baudelet, Christina C. C. Willis, Lawrence Shah, Martin Richardson, "Mid-IR Tm-fiber laser for laser-induced plasma spectroscopy of organic and biological materials"; SPIE Defense, Security, Sensing; Orlando, FL, USA; 04/05, 2010.
56. Martin Richardson, Lawrence Shah, Matthieu Baudelet, Demetrios Christodoulides, John Stryjewski, "New laser and long range optical technologies"; National Consortium for MASINT Research (NCOMR) Spring Technical Review; Maui, HI, USA; 03/30, 2010
57. Yuan Liu, Matthieu Baudelet, Martin C. Richardson, "Trace Detection in Ceramics, Organic and Biological Samples by Microwave-assisted Laser-induced Plasma Spectroscopy"; 2010 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy; Orlando, FL, USA; 03/04, 2010.
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