

BRIAN M. CULLUM; Ph.D – Curriculum Vitae

EDUCATION

Ph.D.	1998	University of South Carolina, Analytical Chemistry <i>Thesis Advisor: Professor S. Michael Angel</i>
B. S.	1994	Frostburg State University, Chemistry
A. A.	1992	Harford Community College, Chemistry

Experience in Higher Education:

2010 - Present	University of Maryland Baltimore County <i>Graduate Program Director, Department of Chemistry & Biochemistry</i>
2008 - Present	University of Maryland Baltimore County <i>Associate Professor, Department of Chemistry & Biochemistry</i>
2007 - Present	University of Maryland Baltimore County <i>Regular Member of the Graduate Faculty</i>
2002 – 2008	University of Maryland Baltimore County <i>Assistant Professor, Department of Chemistry & Biochemistry</i>
2002 - 2007	University of Maryland Baltimore County <i>Associate Member of the Graduate Faculty</i>
1995 - 1999	University of South Carolina <i>Research Assistant, Department of Chemistry & Biochemistry</i>
1994 - 1995	University of South Carolina <i>Teaching Assistant, Department of Chemistry & Biochemistry</i>

Experience in Other than Higher Education:

1999 – 2002	Oak Ridge National Laboratory (U.S. DOE), Postdoctoral Fellow Life Sciences Division <i>Research Mentor: Dr. Tuan Vo-Dinh</i>
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Honors/Awards:

2014	Fellow; SPIE (The International Society of Photonics and Instrumentation Engineering)
2004	Eli Lilly Promising Analytical Chemist Award
2004	UMBC Summer Faculty Fellowship
2003	Eli Lilly Promising Analytical Chemist Award
2003	UMBC Summer Faculty Fellowship
2003	R&D 100 Award; RAMiTS: Raman Integrated Tunable Sensor
2002	Plenary Lecturer; Analytica Conference (Munich; Germany)
1998	Bayer Corporation Award for Graduate Research
1998	Sigma Xi Graduate Research Award
1998	University of South Carolina Graduate Research Award

Patents/Patents Pending:

- B. M. Cullum and H. Li; “Multilayered Surface-Enhanced Raman Scattering (SERS) Substrates,” U.S. Patent No. 7,242,470; Issued July, 10, 2007.
- B. M. Cullum, N. Chandrasekharan and M. Hankus; “Surface Enhanced Raman Spectroscopic Nanoimager,” U.S. Patent No. 7,256,886; Issued August 14, 2007.
- B. M. Cullum, N. Chandrasekharan, R. Mehta and S. Saha; “Technique for High Resolution Subsurface Imaging Using Multiphoton Photoacoustic Spectroscopy,” U.S. Patent Application No. 20050070803; Patent pending, March 31, 2005.

SERVICEProfessional Activities***National/International conferences chaired:***

- 2014 Conference Chair; Smart Medical and Physiological Sensor Technology XI Conference, SPIE Defense Security and Sensing; Baltimore, MD
- 2013 Conference Chair; Smart Medical and Physiological Sensor Technology X Conference, SPIE Defense Security and Sensing; Baltimore, MD
- 2012 Conference Chair; Smart Medical and Physiological Sensor Technology IX Conference, SPIE Defense Security and Sensing; Baltimore, MD
- 2011 Conference Chair; Smart Medical and Physiological Sensor Technology VIII Conference, SPIE Defense Security and Sensing; Orlando, FL
- 2010 Conference Chair; Smart Medical and Physiological Sensor Technology VII Conference, SPIE Defense Security and Sensing; Orlando, FL
- 2009 Conference Chair; Smart Medical and Physiological Sensor Technology VI Conference, SPIE Defense Security and Sensing; Orlando, FL
- 2007 Conference Chair; Smart Medical and Physiological Sensor Technology V Conference, SPIE Optics East; Boston, MA
- 2006 Conference Chair; Smart Medical and Biomedical Sensor Technology IV Conference, SPIE Optics East; Boston, MA
- 2005 Conference Chair; Smart Medical and Biomedical Sensor Technology III Conference, SPIE Optics East; Boston, MA
- 2004 Conference Chair; Smart Medical and Biomedical Sensor Technology II Conference, SPIE Optics East; Philadelphia, PA
- 2003 Conference Chair; Smart Medical and Biomedical Sensor Technology I Conference, SPIE Photonics East; Providence, RI

Editorial responsibilities:

- 2003 – present Volume Editor; SPIE Proceedings
- 2013 – present Editorial Board; JSM Chemistry
- 2012 – present Associate Editor; Encyclopedia of Bio-analysis and Bio-imaging (CRC Press)
- 2011 – 2012 Special Guest Editor; Journal of Nanotechnology (SERS issue)

Grant review activities:

- Army Research Office; Reviewer
- American Society for Engineering Education/U.S. Department of Defense (U.S. DOD); Reviewer
- NASA; Review Panel Member (Astrobiology Instrumentation Development)
- National Science Foundation; Reviewer and Review Panel Member
- National Institutes for Water Resources; Reviewer
- Biomedical Research Council of Singapore; Reviewer

Consulting activities:

- NASA Astrobiology Instrumentation Development (2009); Program consultant
- Abell Foundation (2007); Proposal consultant
- NATO Science for Peace Program (2004); Proposal consultant

Ad Hoc Reviewer for the following journals:

- Applied Spectroscopy
- Journal of Physical Chemistry
- SPIE Proceedings
- Langmuir
- ACS Nano
- Review of Scientific Instruments
- Analytical Chemistry
- Journal of Biomedical Optics
- Analytica Chimica Acta
- Journal of Raman Spectroscopy
- Biophysical Journal
- Photochemistry and Photobiology
- Nanobiophotonics
- Optics Letters
- Annals of Occupational Hygiene
- Biopolymers
- Chemical Physics Letters

Member of the following societies/organizations:

- 2013 – present Optical Society of America (OSA) ; Member
- 2012 – present SPIE; Member (Fellow of SPIE since 2014)
- 2002 - present Society for Applied Spectroscopy; Member
- 1998 - 2000 Sigma Xi Scientific Research Society; Associate Member
- 1996 - 1999 South Carolina Academy of Sciences; Member
- 1994 - 1996 American Chemical Society; Member

University Activities***University committees served on:***

- 2011 – present Member; UMBC/UMB Graduate Council
- 2011 – present Faculty Mentor; I-Cubed Program
- 2010 – 2013 Member; Chemistry Biology Interface Program Steering Committee
- 2008 – 2010 Member; Microscopy/Atomic Force Microscopy Facility Committee
- 2008 - 2009 Member; Biophysics Faculty Search Committee
- 2005 Member; Chemistry/Biology Machinist Search Committee
- 2004 Member; Chemistry/Biology Electronics Technician Search Committee
- 2003-2004 Member; Science 100 Instructor Search Committee

University service:

- 2014 Judge; Graduate Research Awards
- 2007 Judge; Graduate Research Awards
- 2004 Judge; Graduate Research Awards

Departmental Activities***Departmental committees served on:***

- 2013 - 2014 **Chair**; Analytical Faculty Search Committee
- 2011 – 2012 **Chair**; Inorganic Faculty Search Committee
- 2011 – 2012 **Co-Chair/Director**; Graduate Recruiting/Admissions Committee
- 2010 - present **Chair/Director**; Graduate Program Committee
- 2010 - 2011 **Chair**; Analytical Faculty Search Committee
- 2008 - 2010 **Chair** (admissions); Graduate Admissions Committee
- 2008 - 2010 Member; Undergraduate Research Symposium Committee
- 2008 - 2009 Member; Organic Faculty Search Committee

- 2005 – 2010 **Chair**; Graduate Student Recruiting Committee
- 2005 - 2008 Member; Graduate Progression/Admissions Committee
- 2006 - 2007 Member; Inorganic Faculty Search Committee
- 2005 - 2006 Member; Writing in the Discipline Committee
- 2005 - present Member; Mass Spectrometry Facilities Oversight Committee
- 2003 - 2004 Member; Graduate Student Recruiting Committee
- 2002 - 2005 **Co-Chair**; Chemistry Seminar Series Committee

Research Support/Fellowships:

Previous Support: (past ten years)

- 2003 “Multiphoton Photoacoustic Spectroscopy: Development of a Novel High Resolution Subsurface Imaging Technique for Tumor Diagnosis and Margining”; UMBC Summer Faculty Fellowship; Role: PI
- 2003 – 2004 “Multiphoton Photoacoustic Spectroscopy: Development of a Novel High Resolution Subsurface Imaging Technique for Tumor Diagnosis and Margining”; UMBC SRIS/RAS Grant; Role: PI
- 2003 – 2004 “Promising Analytical Chemist Award”; Eli Lilly and Company; Role: PI
- 2004 “Development and Characterization of Fiber Optic Probes for the Real-time Imaging of Chemical Species with Nanometer Spatial Resolution”; UMBC Summer Faculty Fellowship; Role: PI
- 2004 – 2005 “Development and Characterization of Fiber Optic Probes for the Real-time Imaging of Chemical Species with Nanometer Spatial Resolution”; UMBC SRIS/RAS Grant; Role: PI
- 2004 – 2005 “Development of Multiphoton Photoacoustic Spectroscopy for Subsurface Tumor Diagnosis and Imaging”; Maryland Technology Development Corporation (MD TEDCO); Role: PI
- 2004 – 2005 “Development and Evaluation of Novel Implantable Nanosensors for Real-Time Monitoring of Individual Cells and Cellular Signaling”; Defense Advanced Research Projects Agency (DARPA)/Air Force Office of Scientific Research; Role: PI
- 2004 – 2005 “Promising Analytical Chemist Award”; Eli Lilly and Company; Role: PI
- 2004 – 2005 “Novel Surface enhanced Raman Scattering (SERS) Substrates for UV SERS”; ITT Industries; Role: PI
- 2005 – 2009 “Development and Optimization of Multilayered Surface Enhanced Raman Substrates”; Army Research Office; Role: PI
- 2006 – 2010 “Multi-Layered Surround SERS Nanosensor Array System for the Rapid, Specific and Multiplexed Detection of Foodborne Bacteria and Toxins”; U.S. Department of Agriculture (CSREES Program); Role: PI
- 2007 – 2010 “Acquisition of a Confocal Microscope”; National Science Foundation (Major Research Instrumentation Grant); Role: Co-Investigator
- 2009 – 2010 “Innovation and Commercialization of Chemical Detection Technologies”; Alex Brown Center for Entrepreneurship; Role: Co-PI/PI(Choa)
- 2010 – 2012 “Center for Bio-mimetic, Bio-Controlled and Biocompatible Nanoscience: (Phase 1) Optical Nanosensors for Pre-Symptomatic Disease Monitoring”; UMBC Research Seed Funding Initiative; Role: PI
- 2011 – 2012 “Development of a SERS Nanoimager for Robust Biological/Chemical Signature Identification”, U.S. Army Research Laboratory/Maryland Proof of Concept Alliance Fund; Role: PI

Current/Pending Support:

- 2014 – 2017 “Multi-photon Photoacoustic Spectroscopy for Sub-surface Chemical Imaging of Tissues”; National Science Foundation (NSF); Role PI
- 2014 – 2017 “Super-Resolution Dynamic SERS Imaging for Label-Free, Chemical Probing of Cellular Surfaces”; National Science Foundation (NSF); Role PI

Ph.D. Students Mentored

- Honggang Li; Received Ph.D. Degree in August 2007, Role: Advisor/Committee Chair
- Jian Sun; Received Ph.D. August 2010, Role: Advisor/Committee Chair
- Charles Klutse; Received Ph.D. May 2012, Role: Advisor/Committee Chair
- Sudhir Dahal; Degree expected May 2014, Role: Advisor/Committee Chair
- Eric Languirand; Degree expected May 2017, Role: Advisor/Committee Chair
- Pietro Strobbia; Degree expected May 2017, Role: Advisor/Committee Chair

M.S. Students Mentored

- John Kiser; Received M.S. Degree in August 2007, Role: Advisor/Committee Chair
- Mikella Hankus; Received M.S. Degree in December 2007, Role: Advisor/Committee Chair
- Tasha Messenger; Received M.S. Degree in December 2008, Role: Advisor/Committee Chair

Other graduate student committees served on:*Ph.D. student committees*

- Brian Szychowski; Degree expected May 2018, Role: Committee Member
- DeLauren McCauley; Degree expected May 2017, Role: Committee Member
- Gregory Winter; Degree expected May 2017, Role: Committee Member
- Lauren Schoukroun; Degree expected May 2016, Role: Committee Member
- Melissa Davilla-Morris; Degree expected May 2016, Role: Committee Member
- Andrea Gray; Degree expected May 2015, Role: Committee Member
- Liwang Ye (Physics); Degree expected May 2014, Role: Committee Member
- William Ghann; Degree expected May 2014, Role: Committee Member
- Tracy Smith (Biological Sciences); Degree expected Summer 2014, Role: Committee Member
- Brahmi Shukla; Graduated May 2013, Role: Committee Member
- Xing Chen (CSEE); Graduated Summer 2013, Role: Committee Member
- Jules Guei; Graduated December 2010, Role: Committee Member
- Margaret Grow; Graduated August 2012, Role: Committee Member
- Smitha Vokkaliga; Graduated May 2011, Role: Committee Member
- Sarah Wassink; Degree expected May 2014, Role: Committee Member
- Niti Shah; Graduated May 2012, Role: Committee Member
- Jennifer Federoski; Graduated May 2012, Role: Committee Member
- Hailang Zhang; Graduated May 2009, Role: Committee Member
- Unmei Pan; Left Program May 2008, Role: Committee Member
- Suma Vavilala; Graduated May 2010, Role: Committee Member
- Christopher Cowan (Chem Eng.); Graduated May 2009, Role: Committee Member
- Derek Smith (Chem. Eng.); Graduated May 2009, Role: Committee Member
- Yu Zhang; Graduated May 2010, Role: Committee Member
- Sarah Evans; Graduated May 2009, Role: Committee Member

- Radhakrishnan Balu; Graduated May 2008, Role: Committee Member
- Swati Modi; Graduated May 2006, Role: Committee Member
- P. Devin Wigington; Left program December 2004; Role: Committee Member
- Samindhi Wu, Left program May 2008, Role: Committee Member

M.S. student committees

- Ivy Grimm; Received M.S. degree in December 2008, Role: Committee Member
- Haohao Ke; Received M.S. degree in May 2008, Role: Committee Member
- Emily Davis; Received M.S. degree in August 2003, Role: Committee Member

Undergraduate Research Students Mentored

- Brooke Lewis; Summer Undergraduate Research Experience Program (from Alcorn State University; Summer 11); Role: Research Mentor
- Hamsa Gowda; UMBC/HHMI scholar student (Spring 11 – Summer 11), Expected Graduation May 2014 (Major: Chemical Engineering); Role: Research Mentor
- Marc Scimonelli; UMBC undergraduate research (Spring 11 – Fall 2012); Expected Graduated May 2013 (Major: Chemical Engineering); Role: Research Mentor
- Kojo C. Yeboa; UMBC undergraduate research (Spring 10 – Spring 12), MARC student; Graduated May 2013 (Major: Biochemistry); Role: Research Mentor
- Adam Mayer; UMBC undergraduate research (Spring 10 – Spring 13); Graduated May 2013 (Major: Biological Sciences); Role: Research Mentor
- Lillian Johnson; UMBC undergraduate research (Summer 10 – Fall 2012); Graduated May 2013 (Major: Chemical and Biochemical Engineering); Role: Research Mentor; Currently enrolled in graduate school at Cornell University
- Julia Wittkamper; UMBC undergraduate research (Spring 10 – Spring 2012); Graduated May 2012 (Major: Chemistry); Role: Research Mentor; Currently enrolled in graduate school at Cornell University
- Andrew Fales; UMBC undergraduate research (Summer 09 – Spring 2010); Graduated May 2010 (Major: Biochemistry); Role: Research Mentor; Currently enrolled in graduate school at Duke University in Biomedical Engineering
- John Bender; UMBC undergraduate research (Fall 08 – Spring 2010); Graduated May 2010 (Major: Chemistry); Role: Research Mentor; Currently enrolled in graduate school at the University of Maryland College Park
- Nicole Whitten; UMBC undergraduate research (Fall 06 – Spring 2009); Graduated May 2009 (Major: Chemistry); Role: Research Mentor; Currently employed at Tiger Optics
- Asmaa Khatib; UMBC undergraduate research (Fall 07 – Fall 08); Graduation expected May 2010 (Major: Biochemistry & Molecular Biology); Role: Research Mentor
- Jason Kisser; UMBC undergraduate research (Fall 07 – Fall 08); Graduated May 2009 (Major: Biochemistry & Molecular Biology); Role: Research Mentor
- Eric Eller; UMBC undergraduate research (Fall 06 – Fall 07); Graduation expected May 2009 (Major: Chemistry); Role: Research Mentor/Academic Advisor
- D. Ryan Kostick; UMBC undergraduate research (Summer 06 & Fall 07); Graduation expected May 2009 (Major: Chemical Engineering); Role: Research Mentor
- Joshua Wilhide; Villa Julie College undergraduate research (Senior Capstone Project; Fall 06); Graduated May 2007; Role: Research Mentor; Currently enrolled in graduate school at UMBC
- Daniel Buswell; UMBC undergraduate research (Spring 05 – Spring 06); Graduated May 2006 (Major: Chemical Engineering); Role: Research Mentor

- Camille Madison; Summer Undergraduate Research Experience Program (from The University of Rochester; Summer 05 & Summer 06); Role: Research Mentor
- Cecelia Young; Summer Biomedical Research Training Program (from Virginia Union University; (Summer 2004); Role: Research Mentor
- Ashley Cox; Biomedical Summer Undergraduate Research Experience Program (from Wofford College; Summer 2004); Role: Research Mentor
- Gregory Gibson; UMBC undergraduate research (Summer 04 – Spring 06); Graduated May 2006 (Major: Chemical Engineering); Role: Research Mentor
- Bilal Chaudhry; UMBC undergraduate research (Fall 03); Graduated May 2005 (Major: Psychology); Role: Research Mentor
- Veena Rao; UMBC undergraduate research (Fall 03); Graduated May 2006 (Major: Biological Sciences); Role: Research Mentor
- Nicole Villalba Costa; Summer Biomedical Research Training Program (from Universidad Metropolitana; Summer 03); Role: Research Mentor
- Shaan Akbar; UMBC undergraduate research (Spring 04 – Fall 05); Graduated May 2005 (Major: Biological Sciences); Role: Research Mentor
- Donald Parker; UMBC undergraduate research (Fall 03 – Spring 05); Graduated May 2005 (Major: Biological Sciences); Role: Research Mentor
- Pranav Patel; UMBC undergraduate research (Fall 03 – Spring 05); Graduated May 2005 (Major: Biological Sciences); Role: Research Mentor
- Ronak Mehta; UMBC undergraduate research (Fall 03 – Fall 04); Graduated May 2005 (Major: Biochemistry & Molecular Biology); Role: Research Mentor
- Mary Habib; UMBC undergraduate research (Fall 02 - Spring 03); Graduated December 2003 (Major: Information Systems – Systems Analysis and Design); Role: Research Mentor
- Soumi Saha; UMBC undergraduate research Fall 02 – Spring 03); accepted to UMB School of Pharmacy in Fall 03 (UMBC Major: Pre-pharmacy); Role: Research Mentor

PUBLICATIONS

Peer-Reviewed Works – () primary author; * - corresponding author

Books (Written/Edited):

1. Cullum, Brian M.; McLamore, Eric S.; Editors. Smart Biomedical and Physiological Sensor Technology X. Proc. SPIE-Int. Soc. Opt. Eng., 2013; 8719.
2. Cullum, Brian M.; McLamore, Eric S.; Editors. Smart Biomedical and Physiological Sensor Technology IX. Proc. SPIE-Int. Soc. Opt. Eng., 2012; 8367.
3. Cullum, Brian M.; McLamore, Eric S.; Editors. Smart Biomedical and Physiological Sensor Technology VIII. Proc. SPIE-Int. Soc. Opt. Eng., 2011; 8025.
4. Cullum, Brian M.; Porterfield, D. Marshall; Editors. Smart Biomedical and Physiological Sensor Technology VII. Proc. SPIE-Int. Soc. Opt. Eng., 2010; 7674.
5. Cullum, Brian M.; Porterfield, D. Marshall; Editors. Smart Biomedical and Physiological Sensor Technology VI. Proc. SPIE-Int. Soc. Opt. Eng., 2009; 7313.
6. Cullum, Brian M.; Porterfield, D. Marshall; Editors. Smart Biomedical and Physiological Sensor Technology V. Proc. SPIE-Int. Soc. Opt. Eng., 2007; 6759.
7. Cullum, Brian M.; Carter, J. Chance; Editors. Smart Biomedical and Physiological Sensor Technology IV. Proc. SPIE-Int. Soc. Opt. Eng., 2006; 6380.
8. Cullum, Brian M.; Carter, J. Chance; Editors. Smart Biomedical and Physiological Sensor Technology III. Proc. SPIE-Int. Soc. Opt. Eng., 2005; 6007.

9. Cullum, Brian M.; Editor. Smart Biomedical and Physiological Sensor Technology II. Proc. SPIE-Int. Soc. Opt. Eng., 2004; 5588.
10. Cullum, Brian M.; Editor. Smart Biomedical and Physiological Sensor Technology I. Proc. SPIE-Int. Soc. Opt. Eng., 2003; 5261.

Book Chapters:

1. (B. M. Cullum)*, "Sample Collection and Preparation of Liquids and Solids," in Handbook of Spectroscopy; Gunter Gauglitz and Tuan Vo-Dinh (eds.), Weinheim, Germany, Wiley-VCH Verlag GmbH & Co., 2nd edition, 2014, in press.
2. (B. M. Cullum)* and T. Vo-Dinh, "Fluorescence Spectroscopy for Biomedical Diagnostics," in CRC Handbook of Biomedical Photonics; Tuan Vo-Dinh (ed.), Boca Raton, CRC Press, 2nd edition, 2014, in press.
3. C. K. Klutse, T. Vo-Dinh and (B. M. Cullum)*, "Nanosensors for Single-Cell Analyses," in CRC Handbook of Biomedical Photonics; Tuan Vo-Dinh (ed.), Boca Raton, CRC Press, 2nd edition, 2014, in press.
4. (B. M. Cullum)*, "Sub-Diffraction Limited Raman Chemical Imaging," in Applications of Surface-Enhanced Raman Spectroscopy; Stuart Farquharson (ed.), New York, CRC Press, in press 2013.
5. (B. M. Cullum)*, "Nanoscale Optical Biosensors and Biochips for Cellular Diagnostics," in Smart Biosensor Technology; George K. Knopf and Amarjeet S. Bassi (eds.), Boca Raton, CRC Press 2007, p. 109-133.
6. (B. M. Cullum)*, "Optical Nanosensors and Nanobiosensors," in Dekker Encyclopedia of Nanoscience and Nanotechnology; James A. Schwarz, Cristian Contescu and Karol Putyera (eds.), New York, Marcel Dekker, Inc., 2004, pp. 2757 - 2768.
7. (B. M. Cullum) and T. Vo-Dinh*, "Nanosensors for Single-Cell Analyses," in CRC Handbook of Biomedical Photonics; Tuan Vo-Dinh (ed.), Boca Raton, CRC Press, 2003, pp. 60/1 – 60/20.
8. (T. Vo-Dinh)* and B. M. Cullum, "Fluorescence Spectroscopy for Biomedical Diagnostics," in CRC Handbook of Biomedical Photonics; Tuan Vo-Dinh (ed.), Boca Raton, CRC Press, 2003, pp. 28/1 – 28/50.
9. (D. N. Stratis-Cullum), D. L. Stokes, B. M. Cullum, J. M. Song, P. M. Kasili, R. Jagannathan, J. Mobley and T. Vo-Dinh*, "Spectroscopic Data of Biologically and Medically Relevant Species and Samples," in CRC Handbook of Biomedical Photonics; Tuan Vo-Dinh (ed.), Boca Raton, CRC Press, 2003, pp 65/1 – 65/136.
10. (B. M. Cullum) and T. Vo-Dinh*, "Sensors for Biological Applications: Spectroscopic Techniques at the Cellular Level," in Recent and Evolving Advanced Semiconductor and Organic Nano-technologies; Hadis Morkoc (ed.), Academic Press, Volume 3, 2003, pp. 225 - 250.
11. (B. M. Cullum) and T. Vo-Dinh*, "Sample Collection and Preparation of Liquids and Solids," in Handbook of Spectroscopy; Gunter Gauglitz and Tuan Vo-Dinh (eds.), Weinheim, Germany, Wiley-VCH Verlag GmbH & Co., 2003, pp. 17-35.

Selected Peer-Reviewed Journal Articles:

1. (J. B. Kiser), M. E. Hankus and B. M. Cullum*, "Non-Scanning Surface Enhanced Raman Scattering (SERS)-based Nano-imaging System", Rev. Sci. Instrum. In Preparation (2014).

2. (P. Strobbia), A. Mayer and B. M. Cullum*, “Enhanced Sensitivity and Stability of Trapped Multilayered SERS Intracellular Sensors,” Appl. Spectrosc. In Preparation, submission February (2014).
3. (S. Dahal) and Brian M. Cullum*, “Multiphoton Photoacoustic Spectroscopic Differentiation of Astrocytomas,” Journal of Biomedical Optics, In Preparation, submission February (2014).
4. (J. Sun) and B. M. Cullum*, “Gold-based SERS Molecular Beacons for Multiplexed Detection of mRNA *In Vivo*,” in preparation for Appl. Spectrosc. (March 2014).
5. (S. Dahal) and Brian M. Cullum*, “Evaluation of Endogenous Species Involved in Brain Tumors Using Multiphoton Photoacoustic Spectroscopy,” Proc. SPIE – Soc. Opt. Eng., **8719**, p. 871910-1–871910-8 (2013).
6. (S. Dahal) and B. M. Cullum*, “Mimicking Brain Tissues by Doping Scatterers into Gelatin Tissue Phantoms and Determination of Chemical Species Responsible for NMPPAS,” Proc. SPIE – Soc. Opt. Eng., **8367**, p. 836707-01 – 836707-09 (2012).
7. (M. Culha)*, B. M. Cullum, N. Lavrik and C. K. Klutse, “Surface-enhanced Raman Scattering as an Emerging Characterization and Detection Technique”, J. Nanotech. **2012**, 1-15 (2012).
8. (C. K. Klutse), A. Mayer, J. Wittkamper and B. M. Cullum*, “Applications of Self-assembled Monolayers in Surface-enhanced Raman Scattering”, J. Nanotech. **2012**, 1-17 (2012).
9. (C. K. Klutse), and B. M. Cullum*, “Optimization of SAM-based Multi-layer SERS Substrates for Intracellular Analyses: the Effect of Terminating Functional Groups”, Proc. SPIE – Soc. Opt. Eng., **8025**, p. 802502-01 – 802502-11 (2011).
10. (S. Dahal), J. B. Kiser and B. M. Cullum*, “Depth and Resolution Characterization of Two-Photon Photoacoustic Spectroscopy for Non-invasive Subsurface Chemical Diagnostics”, Proc. SPIE – Soc. Opt. Eng., **8025**, p. 80250E-01 – 80250E-07 (2011).
11. (C. K. Klutse), and B. M. Cullum*, “Development of SAM-based Multi-layer SERS Substrates for Intracellular Analyses”, Proc. SPIE – Soc. Opt. Eng., **7674**, p. 767402-1 – 767402-12 (2010).
12. (J. B. Kiser) and B. M. Cullum*, Optical Cross-talk and Surface Characterization of SERS Nanoimaging Bundle Substrates:, Proc. SPIE – Soc. Opt. Eng., **7674**, p. 76740D-1 – 76740D-7 (2010).
13. (C. K. Klutse), H. Li and B. M. Cullum*, “Optimization of Multilayer Surface-enhanced Raman Scattering (SERS) Immuno-nanosensors via Self-assembled Monolayer Spacers,” Proc. SPIE – Soc. Opt. Eng., **7313**, p. 73130C1 – 73130C10 (2009).
14. (J. B. Kiser), M. E. Hankus and B. M. Cullum*, “Tunable Fiber Optic Imaging Bundle SERS Substrates,” Proc. SPIE – Soc. Opt. Eng., **7313**, p. 73130E1 – 73130E8 (2009).
15. (J. Sun), M. E. Hankus and B. M. Cullum*, “SERS-based Immuno-microwell Arrays for Multiplexed Detection of Food-borne Pathogenic Bacteria,” Proc. SPIE – Soc. Opt. Eng., **7313**, p. 73130K1- 73130K10 (2009).
16. (B. M. Cullum)*, H. Li, M. V. Schiza and M. E. Hankus, “Characterization of Multi-Layer Enhanced SERS Substrates and Their Potential for SERS Nano-Imaging,” Nanobiotechnol., **3**(1), p. 1-11 (2007).
17. (J. Kiser), N. Chandrasekharan and B. M. Cullum*, “Determining Two-Photon Absorption Cross Sections via Non-Resonant Multiphoton Photoacoustic Spectroscopy,” Proc. SPIE – Soc. Opt. Eng., **6759**, p. 67590L/1 – 67590L/10 (2007).
18. (M. E. Hankus) and B. M. Cullum*, “SERS Nanoimaging Probes for Characterizing Extracellular Surfaces,” Proc. SPIE – Soc. Opt. Eng., **6759**, p. 675908/1 – 675908/10 (2007).
19. (J. Sun) and B. M. Cullum*, “SERS Beacons for Multiplexed Oligonucleotide Detection,” Proc. SPIE – Soc. Opt. Eng., **6759**, p. 67590F/1 – 67590F/8 (2007).

20. (H. Li), C. E. Baum, J. Sun and B. M. Cullum*, "Multilayer Enhanced Gold Film Over Nanostructure (GFON) Surface-Enhanced Raman Substrates," Appl. Spectrosc., **60** (12), p. 1377-1385 (2006).
21. (M. E. Hankus), G. J. Gibson and B. M. Cullum*, "Surface Enhanced Raman Scattering (SERS)-based Nanoprobe for High Resolution, Non-scanning Chemical Imaging," Anal. Chem. **78** (21), p. 7535-7546 (2006).
22. (H. Li), J. Sun and B. M. Cullum*, "Label-Free Detection of Proteins Using SERS-Based Immuno-Nanosensors," Nanobiotechnol., **2** (1-2), p. 17 - 28 (2006).
23. (H. Li), C. E. Baum and B. M. Cullum*, "Characterization of Novel Gold SERS Substrates with Multilayer Enhancements," Proc. SPIE – Soc. Opt. Eng., **6380**, p. 63800D1 – 63800D12 (2006).
24. (M. E. Hankus) and B. M. Cullum*, "SERS Probes for the Detection and Imaging of Biochemical Species on the Nanoscale," Proc. SPIE – Soc. Opt. Eng., **6380**, p. 638004/1 – 638004/12 (2006).
25. (H. Li), C. E. Baum, J. Sun and B. M. Cullum*, "Multilayer Enhanced SERS Active Materials: Fabrication, Characterization, and Application to Trace Chemical Detection," Proc. SPIE – Soc. Opt. Eng., **6218**, p. 621804/1 – 621804/11, (2006).
26. (H. Li) and B. M. Cullum*, "Dual Layer and Multilayer Enhancements from Silver Film over Nanostructured Surface-Enhanced Raman Substrates," Appl. Spectrosc. **59** (4), p. 410 - 417 (2005).
27. (J. B. Kiser), N. Chandrasekharan and B. M. Cullum*, "NMPPAS Fiber Optic Microprobe for Sub-surface Brain Tumor Diagnosis," Proc. SPIE – Soc. Opt. Eng., **6007**, p.133-142, (2005).
28. (H. Li.), C. E. Baum, J. Sun and B. M. Cullum*, "Label-free Detection of Antigens using Implantable SERS Nanosensors," Proc. SPIE – Soc. Opt. Eng., **6007**, p. 58-70, (2005).
29. (M. E. Hankus), G. J. Gibson and B. M. Cullum*, "Characterization and Optimization of Novel Surface-Enhanced Raman Scattering (SERS)-based Nanoimaging Probes for Chemical Imaging," Proc. SPIE – Soc. Opt. Eng., **6007**, p. 9 – 20, (2005).
30. (H. Li), J. Sun, T. A. Alexander and B. M. Cullum*, "Implantable SERS Nanosensors for Pre-symptomatic Detection of BW (Biological Warfare) Agents," Proc. SPIE – Soc. Opt. Eng., **5795**, p. 8-18 (2005).
31. (M. B. Wabuyele), M. E. Martin, F. Yan, D. L. Stokes, J. Mobley, B. M. Cullum, A. L. Wintenberg, R. Lenarduzzi and T. Vo-Dinh*, "Portable Raman Device for Detection of Chemical and Biological Warfare Agents," Proc. SPIE – Soc. Opt. Eng., **5692**, p. 330 – 336, (2005).
32. (N. Chandrasekharan), J. Kiser and B. M. Cullum*, "Development of a Portable Multiphoton Photo-acoustic Spectroscopy System for Tumor Diagnostics," Proc. SPIE – Soc. Opt. Eng., **5588**, p.169-178, (2005).
33. (M. Hankus), G. Gibson, N. Chandrasekharan and B. M. Cullum*, "Surface Enhanced Raman Scattering (SERS) – Nanoimaging Probes for Biological Analysis," Proc. SPIE – Soc. Opt. Eng., **5588**, p.106-117, (2005).
34. (H. Li), P. Patel and B. M. Cullum*, "Novel multilayered SERS substrates for trace chemical and biochemical analysis," Proc. SPIE – Soc. Opt. Eng., **5588**, p.87-98, (2005).
35. (H. Li), J. Sun and B. M. Cullum*, "Nanosphere-based SERS immuno-sensors for protein analysis," Proc. SPIE – Soc. Opt. Eng., **5588**, p.19-31, (2005).
36. (N. Chandrasekharan), B. Gonzales and B. M. Cullum*, "Non-Resonant Multiphoton Photoacoustic Spectroscopy for Non-invasive Subsurface Chemical Diagnostics," Appl. Spectrosc. **58** (11), p.1325-1333 (2004).

37. (J. Mobley), B. M. Cullum, A. L. Wintenberg, S. S. Frank, R. A. Maples, D. L. Stokes and T. Vo-Dinh*, "Single-board Computer Based Control System for a Portable Raman Device with Integrated Chemical Identification," Rev. Sci. Instrum., **75** (6), p. 1-8 (2004).
38. (H. Li) and B. M. Cullum*, "Development and Characterization of SERS-based Immuno-Nanosensors for Single Cell Analyses," Proc. SPIE – Soc. Opt. Eng., **5261**, p.142-154, (2004).
39. (N. Chandrasekharan), R. Mehta, S. Saha and B. M. Cullum*, "Development of Multiphoton Photoacoustic Spectroscopy for Non-invasive Tissue Diagnostics," Proc. SPIE – Soc. Opt. Eng., **5261**, p.58-69, (2004).
40. (T. Vo-Dinh)*, B. M. Cullum and P. Kasili, "Development of a Multi-spectral Imaging System for Medical Applications," J. Phys. D. – Appl. Phys., **36** (14), p. 1663-1668 (2003).
41. (L. R. Allain), D. N. Stratis-Cullum, B. M. Cullum, J. Mobley, M. R. Hajaligol and T. Vo-Dinh*, "Real-time Detection of PAH Mixtures in the Vapor Phase at High Temperatures," J. Anal. Appl. Pyrolysis, **66**, p. 145 – 154 (2003).
42. (J. M. Song), B. M. Cullum, J. Mobley, J. S. Bogard, M. Moscovitch, G. W. Phillips and T. Vo-Dinh*, "Crossed-beam two-photon Readout System for Three-dimensional Radiation Dosimeters," Rev. Sci. Instrum., **73** (12), p. 4214-4217 (2002).
43. (M. Moscovitch), G. W. Phillips, B. M. Cullum, J. Mobley, J. S. Bogard, D. Emfietzoglou and T. Vo-Dinh*, "Radiation Dosimetry Using Three-dimensional Optical Random Access Memories," Radiat. Protection Dosimetry, **101** (1-4), p. 17-22 (2002).
44. (P. M. Kasili), B. M. Cullum, G. D. Griffin and T. Vo-Dinh*, "Nanosensor for In vivo Measurement of the Carcinogen Benzo [a] Pyrene in a Single Cell," J. Nanosci. Nanotech., **2** (6), p. 653-658 (2002).
45. (B. M. Cullum), J. Mobley, D. L. Stokes, L. R. Allain, D. N. Stratis, A. L. Wintenberg, R. A. Maples and T. Vo-Dinh*, "Development of a Portable Raman Spectrometer for Medical Diagnostics," Proc. SPIE – Soc. Opt. Eng., **4615**, p.82-90, (2002).
46. (B. M. Cullum), G. D. Griffin and T. Vo-Dinh*, "Nanosensors: Design and Application to Site-Specific Cellular Analyses," Proc. SPIE – Soc. Opt. Eng., **4615**, p.148-154, (2002).
47. (T. Vo-Dinh)*, B. M. Cullum, J. Mobley and P. M. Kasili, "Multispectral Imaging for Medical Diagnostics," Proc. SPIE – Soc. Opt. Eng., **4615**, p.13 – 19, (2002).
48. (J. Mobley), B. M. Cullum, M. Holland and T. Vo-Dinh*, "Transcranial Ultrasound for Brain Injury Monitoring: Initial Clinical Studies," Proc. SPIE – Soc. Opt. Eng., **4615**, p.53-60 (2002).
49. (B. M. Cullum), J. Mobley, A. L. Wintenberg, R. A. Maples, D. L. Stokes and T. Vo-Dinh*, "Field-portable AOTF-based Monitor Technology for Environmental Sensing," Proc. SPIE – Soc. Opt. Eng., **4576**, p. 244-254 (2002).
50. T. Vo-Dinh*, (B. M. Cullum) and D. L. Stokes, "Nanosensors and Biochips: Frontiers in Biomolecular Diagnostics," Sensor Actuat B-Chem., **74** (1-3), p.2-11 (2001).
51. (B. M. Cullum) and T. Vo-Dinh*, "Nanosensors for Biochemical Analysis of Single Cells," Chim Oggi, **19** (1-2), p. 58-62 (2001).
52. (S. J. Glenn), B. M. Cullum, R. B. Nair, D. A. Nivens, C. J. Murphy and S. M. Angel*, "Lifetime-based Fiber-optic Water Sensor Using a Luminescent Complex in a Lithium-treated Nafion™ Membrane," Analytica Chimica Acta, **448** (1-2), p. 1-8 (2001).
53. (Z. Chi), B. M. Cullum, D. L. Stokes, J. Mobley, G. H. Miller, M. Hajaligol and T. Vo-Dinh*, "Laser-Induced Fluorescence Studies of Polycyclic Aromatic Hydrocarbon Vapors at High Temperatures," Spectrochimica Acta A, **57** (7), p.1377-1384 (2001).
54. (Z. Chi), B. M. Cullum, D. L. Stokes, J. Mobley, G. H. Miller, M. Hajaligol and T. Vo-Dinh*, "High-temperature Vapor Detection of Polycyclic Aromatic Hydrocarbon Fluorescence," Fuel, **80** (12), p. 1819-1824 (2001).

55. (B. M. Cullum), G. D. Griffin, T. Vo-Dinh*, "Nanosensors for Analysis of a Single Cell," Proc. SPIE – Soc. Opt. Eng., **4254**, p. 35-40 (2001).
56. (J. Mobley), B. M. Cullum and T. Vo-Dinh*, "Ultrasonic Diffraction in the Design of Photoacoustic Probes," Proc. SPIE – Soc. Opt. Eng., **4254**, p. 151-163 (2001).
57. (T. Vo-Dinh)*, B. M. Cullum and G. D. Griffin, "Optical Nanosensors for Single Cell Analysis," Radiat. Res., **156** (4), p. 437-438 (2001).
58. (Z. Chi), B. M. Cullum, J. Mobley, G. H. Miller and T. Vo-Dinh*, "Vapor Detection of Polyaromatic Compounds using Laser-induced Fluorescence," Proc. SPIE – Soc. Opt. Eng., **4199**, p. 173-179 (2001).
59. (B. M. Cullum), J. Mobley, J. S. Bogard and T. Vo-Dinh*, "Detection of Neutrons Using a Novel Three-Dimensional Optical Random Access Memory Technology (3D-ORAM)," Proc. SPIE – Soc. Opt. Eng., **4199**, p. 173-179 (2001).
60. T. Vo-Dinh* and (B. M. Cullum), "Biosensors and Biochips for Bioanalysis," Fresen. J. Anal. Chem., **366**, p. 540-551 (2000).
61. (B. M. Cullum) and T. Vo-Dinh*, "Development of Optical Nanosensors for Biological Measurements," Trends in Biotechnol., **18**, p. 388- 393 (2000).
62. (T. Vo-Dinh)*, G. D. Griffin, J. P. Alarie, B. M. Cullum, B. Sumpter and D. Noid, "Development of Nanosensors and Bioprobes," J. Nanoparticle Research, **2**, p. 17 (2000).
63. (B. M. Cullum) and T. Vo-Dinh*, "Optical Nanosensors and Biological Measurements," Biofutur, **205**, p. A1-A6 (2000).
64. (B. M. Cullum), J. Mobley, J. S. Bogard, M. Moscovitch, G. W. Phillips and T. Vo-Dinh*, "Three-Dimensional Optical Random Access Memory (3D-ORAM) Materials and Read-out System for Radiation Dosimeters," Anal. Chem., **72** (22), p. 5612-5617 (2000).
65. (B. M. Cullum), G. D. Griffin, G. H. Miller and T. Vo-Dinh*, "Intracellular Measurements in Mammary Carcinoma Cells Using Fiber-Optic Nanosensors," Anal. Biochem., **277** (1), p. 25 (2000).
66. T. Vo-Dinh*, (B. M. Cullum), J. P. Alarie and G. D. Griffin, "Antibody-Based Nanosensor for Measurement in a Single Cell," Nature Biotechnology, **18**, p. 764-767 (2000).
67. (B. M. Cullum), J. Mobley, Z. Chi, D. L. Stokes, G. H. Miller and T. Vo-Dinh*, "Development of a Compact Handheld Raman Instrument with No-Moving Parts for Use in Field Analysis," Rev. Sci. Instrum., **71**, p. 1602-1607 (2000).
68. (B. M. Cullum), Z. Chi and T. Vo-Dinh*, "High Temperature Measurements and Instrumentation for Polyaromatic Hydrocarbons (PAHs): a Review," Polycyclic Aromat. Compd., **18**, p. 25-47 (2000).
69. (P. Kasili), J. Mobley, B. M. Cullum and T. Vo-Dinh*, "Bioimaging system using acousto-optic tunable filter," Proc. SPIE – Soc. Opt. Eng., **3911**, p. 345-354 (2000).
70. (J. Mobley), B. M. Cullum and T. Vo-Dinh*, "Method for the Simultaneous Acquisition of Optical Absorption and Sonic Attenuation with Photoacoustic Ultrasound," Proc. SPIE – Soc. Opt. Eng., **3911**, p. 180-190 (2000).
71. (B. M. Cullum), S. K. Shealy and S. Michael Angel*, "Fiber-Optic Resonance Enhanced Multiphoton Ionization (REMPE) Probe for the In-Situ Detection of Volatile Organic Vapors," Appl. Spectrosc., **53** (12), p. 1646-1650 (1999).
72. (B. M. Cullum), J. Mobley, J. S. Bogard, M. Moscovitch and T. Vo-Dinh*, "Development of Instrumental ORAM System for Radiation Dosimetry," Proc. SPIE – Soc. Opt. Eng., **3853**, p. 376-384 (1999).
73. (S. J. Glenn), B. M. Cullum, S. K. Shealy, J. M. Regal and S. M. Angel*, "Lifetime Imaging with Optical Fibers," Proc. SPIE – Soc. Opt. Eng., **3860**, p. 192-200 (1999).

74. (T. Vo-Dinh)*, G. H. Miller, J. Mobley, B. M. Cullum and C. A. DiMarzio, "Development of Methods and Instrumentation for Spectral Imaging," Proc. SPIE – Soc. Opt. Eng., **3853**, (1999).
75. (S. J. Glenn), B. M. Cullum, J. C. Carter, R. B. Nair, D. A. Nivens, C. J. Murphy and S. M. Angel*, "Development of a Lifetime-Based Fiber Optic Imaging Sensor to Study Water Transport in Thin Nafion Membranes," Proc. SPIE – Soc. Opt. Eng., **3540**, p. 235-240 (1999).
76. (B. M. Cullum), and S. M. Angel*, "Development of a Fiber-Optic REMPI Probe for Environmental Contaminants," Proc. SPIE – Soc. Opt. Eng., **3534**, p. 40-48 (1998).
77. (R. B. Nair), B. M. Cullum and C. J. Murphy*, "Optical Properties of [Ru(phen)₂dppz]²⁺ as a Function of Nonaqueous Environment," Inorg. Chem., **36** (6), p. 962-965 (1997).
78. (B. J. Marquardt), B. M. Cullum, T. J. Shaw and S. M. Angel*, "Fiber-Optic Probe for Determining Heavy Metals in Solids Based on Laser-Induced Plasmas," Proc. SPIE – Soc. Opt. Eng., **3105**, p. 203-212 (1997).
79. (K. Sooklal), B. M. Cullum, S. M. Angel, and C. J. Murphy*, "Photophysical Properties of ZnS Nanoclusters with Spatially Localized Mn²⁺," J. Phys. Chem., **100** (10), p. 4551-4555 (1996).

Non-Peer-Reviewed Works

Invited Articles for Trade Journals:

1. (B. M. Cullum)*, "Multiphoton Photoacoustic Spectroscopy: A Novel Approach for High Resolution Margining of Brain Tumors," G.I.T. Laboratory Journal, Europe, **10** (6) 33-34.

Conference Proceedings:

1. (B. M. Cullum), and S. M. Angel*, "A New Technique to Study Halogenated Flame Retardant Efficiency," SAMPE, IWGFM-10 Fire Safety of Materials, (May 1998).
2. (B. M. Cullum), and S. M. Angel*, "The Use of Laser Induced Fluorescence for Studying the Efficiency of Halogenated Flame Retardants," 215th National ACS Meeting, Symposium on Combustion of Traditional and Non-Traditional Fuels, (March 1998).

SELECTED PRESENTATIONS

Invited Oral Presentations (National/International Conferences)

1. (B. M. Cullum)*, "Development of Novel Imaging Tools for Visualizing Chemical Differences at the Nanoscale and Above," Eli Lilly Seminar Series (Invited Seminar) Eli Lilly and Company; October 9th 2012.
2. (C. K. Klutse) and B. M. Cullum*, "Development and Optimization of SERS Nanosensors for Monitoring Intracellular Events," Optical Devices for In-Vivo Diagnostics Conference (Invited Symposium), U.S. FDA, Washington, D.C.; April 2010.
3. (B. M. Cullum)*, "Chemical Imaging at the Nanoscale," Eastern Analytical Symposium, Somerset, NJ; November 16 – 19, 2009.
4. (B. M. Cullum)*, "Highly Ordered SERS Nanoarrays for Sub-Diffraction Limited, Label-free Chemical Imaging," Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Annual Meeting, Louisville, KY; October 18-22, 2009.
5. (B. M. Cullum)*, "Multiplexed SERS Nanosensors and SERS Nano-imaging Probes for Pathogen Detection," American Chemical Society National Meeting, Washington, D.C.; August 17th, 2009.
6. (B. M. Cullum)*, "Multi-layered SERS Substrate Geometries and Their, Application to Chemical Nano-imaging Probes for Biological Agent Detection," Pittsburgh Conference, New Orleans, LA; March 2, 2008.
7. (B. M. Cullum)*, "Multiplexed SERS Nanosensors for Detection of Bacteria and Pathogens in Complex Matrices," Pittsburgh Conference, Chicago, IL; March 1st, 2007.
8. (B. M. Cullum)*, "Smart Nanosensing for the Detection of Biologicals in Complex Matrices," Pittsburgh Conference, Orlando, FL; March 13th 2006.

9. (B. M. Cullum)*, "Fiber Optic SERS Nanoimaging" Eastern Analytical Symposium, Somerset, NJ; November 15 – 18, 2004.
10. (B. M. Cullum)*, "Nanosensing: Molecular Detection and Monitoring at the Sub-Cellular Level," (Plenary Lecture) Analytica Conference, Munich, Germany; April 23-26, 2002.

Oral Presentations (National/International Conferences)

1. (E. Languirand) and B. M. Cullum*, "Towards a Portable Ultrahigh Resolution SERS Imager," SPIE Sensing Technology + Applications, Baltimore, MD; May 7th 2014.
2. (P. Strobbia) and B. M. Cullum*, "Characterization of Ultrathin Oxide Based Multilayer SERS Nanoprobes for Intracellular Sensing," SPIE Sensing Technology + Applications, Baltimore, MD; May 8th 2014.
3. (S. Dahal) and B. M. Cullum*, "Characterization of Endogenous Species in Tissues using Non-resonant Multiphoton Photoacoustic Spectroscopy," SPIE Sensing Technology + Applications, Baltimore, MD; May 8th 2014.
4. (P. Strobbia), A. Mayer, C. K. Klutse and B. M. Cullum*, "Evaluation of Multilayer SERS Nanoprobes for Enhanced Intracellular Sensing," SCIX (FACSS), Milwaukee, WI; Sept. 30th, 2013.
5. (S. Dahal) and B. M. Cullum*, "Characterization of NMPPAS for Brain Tumor Margining and Related Biosignature Identification," SCIX (FACSS), Milwaukee, WI; Oct. 1st, 2013.
6. (E. Languirand), J. B. Kiser and B. M. Cullum*, "Portable Ultra-high Resolution, Dynamic SERS Imaging System," SCIX (FACSS), Milwaukee, WI; Oct. 2nd, 2013.
7. (S. Dahal) and B. M. Cullum*, "Evaluation of Endogenous Species Involved in Brain Tumors Using Multiphoton Photoacoustic Spectroscopy," SPIE Defense, Security and Sensing, Baltimore, MD; May 1st 2013.
8. (S. Dahal) and B. M. Cullum*, "Mimicking Brain Tissues by Doping Scatterers into Gelatin Tissue Phantoms and Determination of Chemical Species Responsible for NMPPAS," SPIE Defense, Security and Sensing, Baltimore, MD; April 26th 2012.
9. (C. K. Klutse), A. Mayer and B. M. Cullum*, "SAM Multilayer SERS Substrate Optimization for Intracellular Applications," FACSS Conference, Reno, NV; October 4th 2011.
10. (C. K. Klutse) and B. M. Cullum*, "Optimization of SAM-based Multilayer SERS Substrates for Intracellular Analyses: the Effect of Terminating Functional Groups", SPIE Defense, Security and Sensing, Orlando, FL.; April 28th 2011.
11. (S. Dahal), J. B. Kiser and B. M. Cullum*, "Depth and Resolution Characterization of Two-Photon Photoacoustic Spectroscopy for Non-invasive Subsurface Chemical Diagnostics", SPIE Defense, Security and Sensing, Orlando, FL.; April 28th 2011.
12. (C. K. Klutse), A. Mayer and B. M. Cullum*, "SERS Multilayer Substrate Optimization using SAM Dielectric Spacers," FACSS Conference, Rayleigh/Durham, NC; October 20th 2010.
13. (C. K. Klutse), A. Mayer and B. M. Cullum*, "Development of SAM-based Multi-layer SERS Substrates for Intracellular Analyses", SPIE Defense, Security and Sensing, Orlando, FL.; April 8th 2010.
14. (J. B. Kiser) and B. M. Cullum*, "Optical Cross-talk and Surface Characterization of SERS Nanoimaging Bundle Substrates," SPIE Defense, Security and Sensing, Orlando, FL.; April 8th 2010.
15. (J. Kiser) and B. M. Cullum*, "Evaluation of Cross-talk in Extended Surface SERS Substrates for Sub-diffraction Limited Chemical Imaging," FACSS Conference, Louisville, KY; October 19th 2009.
16. (C. K. Klutse), H. Li and B. M. Cullum*, "The Effect of SAM Dielectric Spacers on Multi-Layer Surface Enhanced Raman Scattering (SERS) Substrates," FACSS Conference, Louisville, KY; October 19th 2009.
17. (J. Sun), M. E. Hankus and B. M. Cullum*, "Optimization and Characterization of a SERS Based Immunomicrowell-array for Multiplexed Detection of Pathogenic Bacteria," FACSS Conference, Louisville, KY; October 19th 2009.
18. (C. K. Klutse), H. Li and B. M. Cullum*, "Optimization of Multilayer Surface-enhanced Raman Scattering (SERS) Immuno-nanosensors via Self-assembled Monolayer Spacers," SPIE Defense, Security and Sensing, Orlando, FL.; April 13-17th 2009.

19. (J. B. Kiser), M. E. Hankus and B. M. Cullum*, "Tunable Fiber Optic Imaging Bundle SERS Substrates," SPIE Defense, Security and Sensing, Orlando, FL.; April 13-17th 2009.
20. (J. Sun), M. E. Hankus and B. M. Cullum*, "SERS-based Immuno-microwell Arrays for Multiplexed Detection of Food-borne Pathogenic Bacteria," SPIE Defense, Security and Sensing, Orlando, FL.; April 13-17th 2009.
21. (N. P. Whitten), D. N. Stratis-Cullum and B. M. Cullum*, "Hybrid SERS/Fluorescence Bionanoprobes for the Rapid Detection of Toxic Materials," FACSS Conference, Reno, NV, October 2008.
22. (J. B. Kiser), M. E. Hankus and B. M. Cullum*, "Tunable Fiber Optic Imaging Bundles for SERS Chemical Imaging Below the Diffraction Limit," FACSS Conference, Reno, NV, October 2008.
23. (J. Sun), M. E. Hankus and B. M. Cullum*, "SERS Immuno-microwell Arrays for Multiplexed Foodborne Pathogenic Bacteria Detection," FACSS Conference, Reno, NV, October 2008.
24. (J. Sun), M. E. Hankus and B. M. Cullum*, "SERS Immuno-microwell Arrays for Multiplexed Foodborne Pathogenic Bacteria Detection," Pittsburgh Conference, New Orleans, March 2008.
25. (J. B. Kiser) and B. M. Cullum*, "A Fiber Optic Probe for Brain Tumor Analysis Using Non-Resonant Multiphoton Photoacoustic Spectroscopy," Pittsburgh Conference, New Orleans, March 2008.
26. (J. B. Kiser), N. Chandrasekharan and B. M. Cullum*, "Determining Two-Photon Absorption Cross Sections via Non-Resonant Multiphoton Photoacoustic Spectroscopy," SPIE Optics East, Boston, September 9-12th 2007.
27. (J. Sun), M. E. Hankus and B. M. Cullum*, "SERS Beacon Microarray for Multiplexed Oligonucleotide Detection," SPIE Optics East, Boston, September 9-12th 2007.
28. (M. E. Hankus) and B. M. Cullum*, "SERS Nanoimaging Probes for Chemical Detection and Imaging of Extracellular Surfaces," SPIE Optics East, Boston, September 9-12th 2007.
29. (J. Sun), H. Li and B. M. Cullum*, "SERS Beacons for Multiplexed Oligonucleotide Detection," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, March 1st 2007.
30. (M. E. Hankus) and B. M. Cullum*, "Multiplexed Detection and Chemical Imaging Using Novel Surface Enhanced Raman Scattering (SERS)-Based Nanoprobes," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, February 25th 2007.
31. (H. Li), C. E. Baum and B. M. Cullum*, "Novel Gold SERS Substrates with Multilayer Enhancements," SPIE Optics East, Boston, October 3rd 2006.
32. (M. E. Hankus) and B. M. Cullum*, "SERS Probes for Imaging Individual Biochemical Species on the Nanoscale," SPIE Optics East, Boston, October 3rd 2006.
33. (H. Li), C. E. Baum, M. E. Hankus and B. M. Cullum*, "Multilayer Enhanced SERS Active Materials: Fabrication Characterization and Application to Trace Chemical Detection," SPIE Defense and Security Conference, Orlando, April 19th 2006.
34. (J. B. Kiser), D. Buswell and B. M. Cullum*, "Development of a Non-Resonant Multiphoton Photoacoustic Fiber Optic Probe for the Margining of Brain Tumors," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, March 14th 2006.
35. (M. E. Hankus), G. J. Gibson and B. M. Cullum*, "Surface Enhanced Raman Scattering (SERS) Nanoimaging Probe for Dynamic Chemical Imaging," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, March 15th 2006.
36. (H. Li), S. Nayak and B. M. Cullum*, "Multilayer Amplified Surface Enhanced Raman Scattering (SERS) Nanosensors for Intracellular Analyses," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, March 13th 2006.
37. (J. Sun), H. Li, S. Daphnis and B. M. Cullum*, "Development and Characterization of Novel, Multi-layer SERS Substrates," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, March 12th 2006.
38. (J. B. Kiser), N. Chandrasekharan and B. M. Cullum*, "Sub-surface Brain Tumor Diagnosis Using a Portable NMPPAS-based Fiber Optic Microprobe," SPIE, Boston, October 26th 2005.
39. (H. Li.), C. E. Baum and B. M. Cullum*, "Label-free Detection of Antigens using Implantable SERS Nanosensors," SPIE, Boston, October 25th 2005.

40. (M. E. Hankus), G. J. Gibson and B. M. Cullum*, "Characterization and Optimization of Novel Surface-enhanced Raman Scattering (SERS)-based Nanoimaging Probes for Chemical Imaging," SPIE, Boston, October 25th 2005.
41. (B. M. Cullum*), M. E. Hankus and G. J. Gibson, "Development and Characterization of a Fiber Optic Surface Enhanced Raman Scattering (SERS) Nano-Imaging Probe," FACSS Conference, Quebec City, Canada, October 10th 2005.
42. (B. M. Cullum*), J. B. Kiser and D. Buswell, "Development of a Miniature Fiber Optic Non-Resonant Multi-Photon Photoacoustic Spectroscopy Probe for Subsurface Tumor Diagnostics," FACSS Conference, Quebec City, Canada, October 10th 2005.
43. (H. Li), J. Sun, T. A. Alexander, S. O. Rosenberg and B. M. Cullum*, "Implantable SERS Nanosensors for Pre-symptomatic Detection of BW Agents, SPIE Defense and Security Conference, Orlando, March 28th 2005.
44. (H. Li) and B. M. Cullum*, "SERS Based Immuno-Nanosensor for Trace Protein Analyses," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, March 2nd 2005.
45. (M. E. Hankus), G. J. Gibson, N. Chandrasekharan and B. M. Cullum*, "SERS Chemical Imaging Nanoprobe for Application to Biological Systems," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, March 1st 2005.
46. (N. Chandrasekharan), J. B. Kiser and B. M. Cullum*, "Non-Resonant Multi-Photon Photoacoustic Spectroscopy for Subsurface Tumor Diagnostics," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, February 28th 2005.
47. (H. Li) and B. M. Cullum*, "Nanosphere-based SERS Immuno-sensors for Protein Analysis," SPIE, Philadelphia, October 25 – 28, 2004.
48. (H. Li) and B. M. Cullum*, "Novel Multilayered SERS Substrates for Trace Chemical and Biochemical Analysis," SPIE, Philadelphia, October 25 – 28, 2004.
49. (M. Hankus), N. Chandrasekharan and B. M. Cullum*, "SERS Nano-imaging Sensors for Biological Analysis," SPIE, Philadelphia, October 25 – 28, 2004.
50. (N. Chandrasekharan) and B. M. Cullum*, "Development of a Portable Multiphoton Photo-acoustic Spectroscopy System for Tumor Diagnostics," SPIE, Philadelphia, October 25 – 28, 2004.
51. (N. Chandrasekharan) and B. M. Cullum*, "Development of SERS-Nanoimaging Sensors," Paper # 11900-400, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, March 7 -12, 2004.
52. (H. Li) and B. M. Cullum*, "Development and Optimization of Nanosphere-based SERS Immuno-sensors," Paper # 14400-300, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, March 7 -12, 2004.
53. (N. Chandrasekharan) and B. M. Cullum*, "Multi-photon Photoacoustic Spectroscopy for Subsurface Tissue Diagnostics," Paper # 18300-300, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, March 7 -12, 2004.
54. (H. Li) and B. M. Cullum*, "Novel Multilayered Silver Film SERS Substrates for Trace Analyses," Paper # 18400-600, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, March 7 -12, 2004.
55. (D. L. Stokes), B. M. Cullum, R. Lenarduzzi, J. Mobley, B. E. Phifer, S. Singh, A. L. Wintenberg and T. Vo-Dinh*, "An AOTF-Based Instrument for Raman and SERS Detection of Particulate Matter in Air," Paper # 20500-900, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, March 7 -12, 2004.
56. (H. Li) and B. M. Cullum*, "Development and Characterization of SERS-based Immuno-Nanosensors for Single Cell Analyses," SPIE, Providence, October 27 – 28, 2003.
57. (N. Chandrasekharan), R. Mehta, S. Saha and B. M. Cullum*, "Development of Multiphoton Photoacoustic Spectroscopy for Non-invasive Tissue Diagnostics," SPIE, Providence, October 27 – 28, 2003.
58. (B. M. Cullum), J. Mobley, D. L. Stokes, L. R. Allain, D. N. Stratis, A. L. Wintenberg, R. A. Maples and T. Vo-Dinh*, "Development of a Portable Raman Spectrometer for Medical Diagnostics," SPIE, San Jose, January 2002.

59. (B. M. Cullum), G. D. Griffin and T. Vo-Dinh*, "Nanosensors: Design and Application to Site-Specific Cellular Analyses," SPIE, San Jose, January 2002.
60. (T. Vo-Dinh)*, B. M. Cullum, J. Mobley and P. M. Kasili, "Multispectral Imaging for Medical Diagnostics," SPIE, San Jose, January 2002.
61. (J. Mobley), B. M. Cullum and T. Vo-Dinh*, "Ultrasound Monitoring of Brain Injury: an Initial Clinical Study," SPIE, San Jose, January 2002.
62. (B. M. Cullum), J. Mobley, A. L. Wintenberg, R. A. Maples, (D. L. Stokes) and T. Vo-Dinh*, "Field-portable AOTF-based Monitor Technology for Environmental Sensing," SPIE, Boston, October 2002.
63. (B. M. Cullum), G. D. Griffin, P. M. Kasili and T. Vo-Dinh*, "Development of Fiber Optic Nanosensors for Cellular Analyses," Paper # 391, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 6, 2001.
64. (Z. Chi), B. M. Cullum and T. Vo-Dinh*, "Development of a Real-Time Fluorescence Detection System for Vapor Polycyclic Aromatic Hydrocarbons at Elevated Temperatures," Paper # 700, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 7, 2001.
65. (B. M. Cullum), J. Mobley, J. Bogard, E. Guernsey, A. N. Mathur and T. Vo-Dinh*, "3D-Optical Random Access Memory Materials for Use as Energetic Neutron Dosimeters," Paper # 927, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 7, 2001.
66. (D. L. Stokes), B. M. Cullum, J. Mobley and T. Vo-Dinh*, "SERS Detection of Chemicals Using an AOTF-Based Detection System," Paper # 1401, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 9, 2001.
67. (B. M. Cullum), J. Mobley, J. S. Bogard, M. Moscovitch, G. W. Phillips and T. Vo-Dinh*, "Detection of Neutrons Using a Novel Three-Dimensional Optical Random Access Memory (3-D ORAM) Technology," SPIE International Symposium on Industrial and Environmental Monitors and Biosensors, Environmental Monitoring and Remediation Techniques Session, October 2000.
68. (B. M. Cullum), J. Mobley, J. S. Bogard and T. Vo-Dinh*, "Three-Dimensional (3-D) Optical Random Access Memory Materials as Neutron Dosimeters," Paper # 111, presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Nashville, TN, September, 2000.
69. (B. M. Cullum), G. D. Griffin, L. R. Allain and T. Vo-Dinh*, "Antibody-Based Fiber-Optic Nanoprobes for Intracellular Measurements," Paper # 426, presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Nashville, TN, September, 2000.
70. (J. Mobley), B. M. Cullum and T. Vo-Dinh*, "Photoacoustic Method for the Simultaneous Acquisition of Optical and Ultrasonic Spectra," Paper # 671, presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Nashville, TN, September, 2000.
71. (R. C. Chinni), B. M. Cullum, S. K. Shealy and S. M. Angel*, "Fiber-Optic Resonant-Enhanced Multiphoton Ionization (REMPI) Probe for Analyses of Volatile Organic Compounds," Paper # 15, presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Nashville, TN, September, 2000.
72. (B. M. Cullum), T. Vo-Dinh*, M. Panjehpour and B. F. Overholt, "Advanced Fluorescence Techniques for *in-vivo* Cancer Diagnosis," Tennessee 2000 Biomedical Engineering Conference, Knoxville, TN March 30, 2000.
73. (B. M. Cullum), J. Mobley, Z. Chi, D. L. Stokes and T. Vo-Dinh*, "Compact, Portable AOTF-Based Raman Instrument for Chemical Analyses," Paper # 1148, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 16, 2000.
74. (B. M. Cullum), G. D. Griffin and T. Vo-Dinh*, "Fiber Optic Nanosensors for Intracellular Analysis," Paper # 1150, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 16, 2000.
75. (B. M. Cullum), J. Mobley, J. S. Bogard, M. Moscovitch and T. Vo-Dinh*, "Development of Instrumental ORAM System for Radiation Dosimetry," SPIE International Symposium on Industrial and Environmental Monitors and Biosensors, Environmental Monitoring and Remediation Techniques Session, October 1999.
76. (T. Vo-Dinh)*, G. H. Miller, J. Mobley, B. M. Cullum and C. A. DiMarzio, "Development of Methods and Instrumentation for Spectral Imaging," SPIE International Symposium on Industrial and

Environmental Monitors and Biosensors, Environmental Monitoring and Remediation Techniques Session, October 1999.

77. (S. J. Glenn), B. M. Cullum, S. K. Shealy and S. M. Angel*, "Lifetime Imaging with Optical Fibers," SPIE International Symposium on Industrial and Environmental Monitors and Biosensors, Environmental Monitoring and Remediation Techniques Session, October 1999.
78. (B. M. Cullum) and S. M. Angel*, "Development of a Fiber-Optic REMPI Probe for Environmental Contaminants," presented at SPIE International Symposium on Industrial and Environmental Monitors and Biosensors, Environmental Monitoring and Remediation Techniques Session, Boston, MA, November 1998.
79. (B. M. Cullum), S. J. Glenn, and S. M. Angel*, "Fluorescence Lifetime Imaging Using Dual Laser Pulses and a Non-gated CCD," presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Austin, TX, October, 1998.
80. (B. M. Cullum), S. K. Shealy, and S. M. Angel*, "Fiber-Optic REMPI Probe for Monitoring Environmental Contaminants," presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Austin, TX, October, 1998.
81. (B. M. Cullum) and S. M. Angel*, "New Technique to Study Halogenated Flame Retardant Efficiency," Presented at the 43rd International SAMPE Symposium and Exhibition, Anaheim, CA, May, 1998.
82. (B. M. Cullum) and S. M. Angel*, "The Use of Laser-Induced Fluorescence for Studying the Efficiency of Halogenated Flame Retardants," 215th National Meeting of the ACS, Dallas, TX, March, 1996.
83. (B. M. Cullum) and S. M. Angel*, "A Novel Fluorescence Lifetime Imaging Technique," South Carolina Academy of Sciences meeting (SCAS), Columbia, SC, March 20, 1998.
84. (B. M. Cullum), B. J. Marquardt and S. M. Angel*, "Spectroscopic Insights into the Mechanism of Brominated Flame Retardation," Paper # 1193, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 5, 1998.
85. (B. J. Marquardt), B. M. Cullum, and S. M. Angel*, "Fiber-Optic LIBS/RAMAN Imaging Probe for In-Situ Elemental Microanalysis," Paper # 942, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA March 5, 1998.
86. (B. M. Cullum), P. K. Khulbe, B. J. Marquardt and S. M. Angel*, "Spectrally and Temporally Resolved Laser Induced Fluorescence (LIF) Provides Insight into the Mechanism of Flame Retardation," Paper #279, presented at Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Providence, R.I.; October, 1997.
87. (B. J. Marquardt), B. M. Cullum and S. M. Angel*, "Fiber-Optic Probe for Determining Heavy Metals in Solids Based on Laser-Induced Plasmas," Paper #3105-40, Envirosense 1997; Munich, Germany, June 18, 1997.
88. (B. M. Cullum), B. J. Marquardt and S. M. Angel*, "Spectrally and Temporally Resolved LIF for the Measurement of Radical Species in Flames," presented at the South Carolina Academy of Sciences meeting (SCAS), Columbia, SC, April 11, 1997.
89. (B. J. Marquardt), B. M. Cullum and S. M. Angel*, "Spatial Profiling of Laser-Induced Plasmas for the Purpose of Optimizing LIBS as an Analytical Technique," presented at the South Carolina Academy of Sciences meeting (SCAS), Columbia, SC, April 11, 1997.
90. (B. M. Cullum), B. J. Marquardt and S. M. Angel*, "Laser Ablation as a Technique for the Introduction of Solid Polymer Samples into a Flame," Paper #795, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA; March 19, 1997.

Other Professional Presentations

Invited Workshops/Symposia/Seminars

1. (B. M. Cullum)*, "Development of Novel Imaging Tools for Visualizing Chemical Differences at the Nanoscale and Above," Eli Lilly Seminar Series (Invited Seminar) Eli Lilly and Company; October 9th 2012.
2. (C. K. Klutse) and B. M. Cullum*, "Development and Optimization of SERS Nanosensors for Monitoring Intracellular Events," Optical Devices for In-Vivo Diagnostics Conference (Invited Symposium), U.S. FDA, Washington, D.C.; April 2010.

3. (B. M. Cullum)*, "SERS Chemical Imaging at the Nanoscale," Optical Devices for In-Vivo Diagnostics Conference (Invited Symposium), U.S. FDA, Washington, D.C.; April 6th 2009.
4. (B. M. Cullum)*, "Optical Nanosensing and Chemical Imaging: Diagnostics Tools for Individual Cells and Humans Alike," Optical Devices for In-Vivo Diagnostics Conference (Invited Symposium), U.S. FDA, Gaithersburg, Maryland; May 1st 2007.
5. (B. M. Cullum)*, "Optical Nanosensors and Nanoprobes for Dynamics Cellular Sensing and Sub-Diffraction Limited Chemical Imaging," IEEE Lasers and E-O Society (Invited Symposium); Johns Hopkins Applied Physics Laboratory, Laurel, MD; March 28th 2007.
6. (B. M. Cullum)*, "Optical Nanosensors and Nanoprobes: Development of Tools for the Analysis of Chemical and Biochemical Processes on the Nanoscale," Millersville University Seminar Series (Invited Seminar); Millersville University, Millersville, PA; October 23rd 2006.
7. (B. M. Cullum)*, "Optical Nanosensors for the Monitoring of Cellular Signaling in Individual Living Cells and Non-invasive Optical Diagnostics for Subsurface Tumor Imaging," Stevens Institute Seminar Series (Invited Seminar); Stevens Institute; Hoboken, New Jersey; March 29th 2006.
8. (B. M. Cullum)*, "Optical Nanosensing and Chemical Imaging: Diagnostics Tools for Individual Cells and Humans Alike," Johns Hopkins Applied Physics Laboratory (Invited Seminar); Johns Hopkins Applied Physics Laboratory; Laurel, MD; February 14th 2006.
9. (B. M. Cullum)*, "Optical Nanosensors for the Monitoring of Cellular Signaling in Individual Living Cells and Non-invasive Optical Diagnostics for Subsurface Tumor Imaging," University of South Carolina Seminar Series (Invited Seminar); University of South Carolina; Columbia, South Carolina; January 18th 2006.
10. (B. M. Cullum)*, "Optical Nanosensors for the Monitoring of Cellular Signaling in Individual Living Cells and Non-invasive Optical Diagnostics for Subsurface Tumor Imaging," Food and Drug Administration (FDA) Seminar Series (Invited Seminar); U.S. FDA; Gaithersburg, Maryland; November 18th 2005.
11. (B. M. Cullum)*, "Implantable Nanosensors for Real-Time Monitoring of Cellular Signaling Pathways in Single Living Cells," Cell Signaling Workshop (Invited Workshop) Defense Advanced Research Projects Agency (DARPA); Arlington, Virginia; September 27th, 2005.
12. (B. M. Cullum)*, "Tunable SERS-Active Probes for Multiplexed Chemical and Biological Sensing and Nano-Imaging," SERS Nanoparticles, Nanoparticle Assemblies, and Substrates for Chem/Bio Sensing (Invited Workshop) Defense Advanced Research Projects Agency (DARPA); Redwood City, California; July 29th, 2005.
13. (B. M. Cullum)*, "Development of Optical Nanosensors for the Monitoring of Cellular Signaling and Protein Expression in Individual Living Cells," Eli Lilly Seminar Series (Invited Seminar) Eli Lilly and Company; August 26th 2004.
14. (B. M. Cullum)*, "Development and Evaluation of Novel Implantable Nanosensors for Real-Time Monitoring of Individual Cell and Cellular Signaling," Real Time Monitoring of Signaling Pathways in Biological Cells (Invited Workshop) Defense Advanced Research Projects Agency (DARPA); Arlington, Virginia; April 22, 2003.
15. (B. M. Cullum)*, "Development of Spectroscopic Techniques for the Probing of Individual Cells," Real Time Monitoring of Signaling Pathways in Biological Cells II (Invited Workshop) Defense Advanced Research Projects Agency (DARPA); Pasadena, California; July 23, 2003.
16. (T. Vo-Dinh)*, B. M. Cullum and G. D. Griffin, "Optical Nanosensors for Single-Cell Analysis," Probing Individual Cells: Application to Signaling, Structure and Function (Invited Workshop) National Cancer Institute (NCI); Bethesda, Maryland; March 12-14 2001.
17. (B. M. Cullum), J. S. Bogard, J. Mobley, M. Moscovitch, G. Phillips and T. Vo-Dinh*, "Development of Three Dimensional (3-D) Optical Random Access Memory Materials for Use as Neutron Dosimeters," Radiation Detection Technologies for the National Security Community (Invited Symposium); U.S. DOE (NNSA); Nellis Air Force Base, Las Vegas, Nevada; November 2000.

Poster Presentations (National/International Conferences)

1. (B. Lewis), S. Dahal and B.M. Cullum*, "Multi-photon Photoacoustic Spectroscopy for Sub-surface Tissue Analyses," Annual Biomedical Research Conference for Minority Students (ABRCMS), St. Louis, Nov. 2011.
2. (T. N. Messenger), J. B. Kiser and B.M. Cullum*, "Crossed Beam Thermal Lens Spectroscopy for Standoff Detection of Chemical Species," FACSS Conference, Reno, NV, September 24th 2008. Received the SAS outstanding student presentation award.
3. (H. Li) and B.M. Cullum*, "Multilayer Enhanced Gold Film Over Nano-Structured SERS Substrates for Extended Shelf-Life and Sensitivity," FACSS Conference, Orlando, September 24th 2006. Received the SAS outstanding student presentation award.
4. (H. Li), J. Sun, and B. M. Cullum*, "Development and Characterization of Multilayer Enhanced SERS Immuno-Nanosensors," FACSS Conference; Quebec City, Canada, October 13th 2005.

Oral Presentations (Local/University Conferences)

1. (B. Lewis), S. Dahal and B.M. Cullum*, "Multi-photon Photoacoustic Spectroscopy for Sub-surface Tissue Analyses," UMBC Summer Undergraduate Research Fest, UMBC, Aug. 2011
2. (C. Madison), J. Kiser and B. M. Cullum*, "Spectral Measurements of Molecular Dyes and Cellular Biochemicals Using Non-Resonant Multiphoton Photoacoustic Spectroscopy (NMPPAS)," UMBC Undergraduate Research Fest, August 9th 2006.
3. (B. M. Cullum)*, "Optical Nanosensors and Nanoprobes for Dynamic Cellular Sensing and Sub-diffraction Limited Chemical Imaging," UMBC Physics Department Seminar Series, April 19th 2006.
4. (B.M. Cullum)*, "Optical Nanosensors for the Monitoring of Cellular Signaling in Individual Living Cells," UMBC Computer Science and Electrical Engineering Department Seminar Series, February 10, 2006.
5. (B. M. Cullum)*, "Optical Nanosensing: Real-time Visualization of Cellular Signaling at the Molecular Level," UMBC Biological Sciences Departmental Seminar Series, April 20th 2005.
6. (C. Young), J. Kiser and B. M. Cullum*, "Fiber Optic NMPPAS Probe for In-Vivo Tumor Diagnosis," NIDDK Undergraduate Research Conference at UMBC, August 12, 2004.
7. (H. Li) and B. M. Cullum*, "Development and Optimization of SERS-Based Immuno-Nanosensors for Protein Analyses," UMBC Graduate Research Conference, Baltimore, April 23, 2004. Received 2nd Place Award for Presentation.

Poster Presentations (Local/University Conferences)

1. (A. Mayer), C.K. Klutse and B. M. Cullum*, "The Development of Optimized SERS Nanosensors for Intracellular Analyses," Undergraduate Research and Creative Achievement Day," UMBC April 25, 2012.
2. (K. Yeboa), J. B. Kiser and B. M. Cullum*, "Chemical Imaging Using Surface Enhanced Raman Scattering Nano-imaging Gold Probes," Undergraduate Research and Creative Achievement Day," UMBC April 25, 2012.
3. (K. Yeboa), J. B. Kiser and B. M. Cullum*, "Cross-Talk Detection in Surface-enhanced Raman Scattering Nano-imaging Probes," Undergraduate Research and Creative Achievement Day," UMBC , April 27, 2011.
4. (J. Wittkamper), C. K. Klutse and B. M. Cullum*, "Optimization of Metal Film on Nanostructured SERS Substrates," Undergraduate Research and Creative Achievement Day," UMBC , April 27, 2011.
5. (B. Lewis), S. Dahal and B.M. Cullum*, "Multi-photon Photoacoustic Spectroscopy for Sub-surface Tissue Analyses," UMBC Undergraduate Research Fest, August 2011.
6. (K. Yeboa), J.B. Kiser and B. M. Cullum*, "Cross-talk Detection in Surface-enhanced Raman Scattering Nano-imaging Probes" McNair Scholars Poster Presentation, Pennsylvania State University, Summer 2011.
7. (K. Yeboa), J. B. Kiser and B.M. Cullum*, "Cross-talk Detection in Surface-enhanced Raman Scattering Nano-imaging Probes" Undergraduate Research and Creative Achievement Day, UMBC, 2010.
8. (H. Li) and B. M. Cullum*, "Intracellular SERS Nanosensors for the Monitoring of Cellular Response," A Look Ahead X, University of Maryland Baltimore County, Baltimore, November 1st 2006.

9. (M. E. Hankus), J. A. Wilhide and B. M. Cullum*, "Dynamic Biochemical Detection and Imaging Employing Surface-Enhanced Raman Scattering (SERS)-Based Nanoprobes," A Look Ahead X, University of Maryland Baltimore County, Baltimore, November 1st 2006.
10. (H. Li) and B. M. Cullum*, "Development and Characterization of Multilayer Enhanced SERS Immuno-Nanosensors," A Look Ahead IX, University of Maryland Baltimore County, Baltimore, November 15th 2005.
11. (M. E. Hankus), G. J. Gibson and B. M. Cullum*, "Surface Enhanced Raman Scattering (SERS)-Nanoimaging Probe for Dynamic Molecular Level Imaging," A Look Ahead IX, University of Maryland Baltimore County, Baltimore, November 15th 2005.
12. (C. B. Madison), N. Chandrasekharan, J. B. Kiser and B. M. Cullum*, "Two-photon Excitation Spectra of Molecular Fluorophores Using Nonresonant Multiphoton Photoacoustic Spectroscopy (NMPPAS)," Eighth Annual Summer Undergrad. Research Fest, Baltimore, August 10th 2005.
13. (G. J. Gibson), M. E. Hankus, N. Chandrasekharan and B. M. Cullum*, "Development of Nano-Imaging Probes for Cellular Analysis," Presentation to on Undergrad. Research to the Maryland State Legislature, Annapolis, March 2005.
14. (N. Chandrasekharan), J. B. Kiser and B. M. Cullum*, "Development of a Micro-Fiber Optic Probe for Subsurface Tumor Diagnostics," A Look Ahead VIII, University of Maryland Baltimore County, Baltimore, November 17th 2004.
15. (H. Li.), J. Sun and B. M. Cullum*, "SERS-based Nanosensors for Protein Analyses at the Cellular Level," A Look Ahead VIII, University of Maryland Baltimore County, Baltimore, November 17th 2004.
16. (G. J. Gibson), M. E. Hankus, N. Chandrasekharan and B. M. Cullum*, "Nanoscale Fiberoptic Probes for Real-Time Chemical Imaging," UMBC Undergrad. Research Symposium, Baltimore, September 2004.
17. (Ashley Cox), N. Chandrasekharan and B. M. Cullum*, "Detection and Diagnosis of Brain Tumors via NMPPAS," UMBC Summer Undergrad. Research Fest, Baltimore, August 10, 2004.
18. (H. Li), P. Patel and B. M. Cullum*, "Development and Characterization of SERS-based Immuno-Nanosensors for Single Cell Analyses," A Look Ahead VII, University of Maryland Baltimore County, Baltimore, November 12, 2003.
19. (N. Chandrasekharan), R. Mehta and B. M. Cullum*, "Multiphoton Photoacoustic Spectroscopy for Tissue Diagnostics," A Look Ahead VII, University of Maryland Baltimore County, Baltimore, November 12, 2003.
20. (P. Patel), H. Li and B. M. Cullum*, "Development and Optimization of SERS Immuno-Nanosensors for Monitoring Protein Expression in Individual Living Cells," UMBC Undergrad. Research Symposium, Baltimore, November 1, 2003.
21. (R. Mehta), N. Chandrasekharan, V. Rao and B. M. Cullum*, "Multi-Photon Photoacoustic Spectroscopy for Non-Invasive Tissue Diagnosis," UMBC Undergrad. Research Symposium, Baltimore, November 1, 2003. Received 2nd Place Award for Poster.
22. (D. Parker), M. Habib and B. M. Cullum*, "Development of Silica Nanosphere Sensors for the Detection of Intracellular Calcium Levels in Living Cells," UMBC Undergrad. Research Symposium, Baltimore, November 1, 2003.
23. (N. A. V. Costa), H. Li and B. M. Cullum*, "Development of Novel Immuno-SERS Sensors," UMBC Summer Undergrad. Research Fest, Baltimore, August 6, 2003.