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EDUCATION

Ph.D. Electrical Engineering, January 2004.

Oregon Health and Science University, Portland, OR

M.S. Electrical Engineering, January 2004.

Oregon Health and Science University, Portland, OR

Laura Electrical Engineering, July 1993.

EXPERIENCE

1993-1998 Engineer for semiconductor companies, (Semitool Inc., Kalispell, MT, Submicron Systems Corp., Allentown, PA, and CET Control Systems, Novara, Italy)

1999-2004 Graduate Research Assistant, Oregon Medical Laser Center, Portland, OR.

2004-2005 Postdoctoral Fellow, Applied Physics Laboratory, Johns Hopkins University, Baltimore, MD.

2005-2010 Assistant Professor, The Catholic University of America, Washington, DC.

2008-present Adjunct Assistant Professor, Johns Hopkins University School of Medicine, Baltimore, MD.

2009-present Senior Research Scientist, National Rehabilitation Hospital, Washington, DC.

2010-present Associated Professor (Tenured), The Catholic University of America, Washington, DC.

2012-2013 Visiting Associate Professor Johns Hopkins University (Sabbatical).

2013-present Associated Professor, Florida International University, Miami, FL.

HONORS

2011 - Kaman Award for Excellence in Research, The Catholic University of America.

2010 - Kaman Award for Excellence in Teaching, The Catholic University of America.

2008 - Provost Award for Excellence in Research and Scholarship, The Catholic University of America.

2004 - APL Postdoctoral Fellowship Engineering Program.

2003 - Paul Clayton Student Achievement Award.

PROFESSIONAL MEMBERSHIPS

- Editorial Board Member, Polarized Light Special Issue, Journal of Biomedical Optics (2015-2016, ongoing)

- Panelist at SPIE BIOS conference San Francisco (Panel Discussion: Panel Discussion on Speckle in Biomedical Optics) (2016)

- Guest Editor of Biomedical Optics Express, special issue dedicated to Phantoms for the Performance Evaluation and Validation of Optical Medical Imaging Devices (2012)

- Panelist at SPIE BIOS conference San Francisco (Panel Discussion: 3D and 4D microcirculation imaging: Where Will the Clinical Impact Be?) (2012)

- Chair and Organizer of Optical Phantom NIST-Workshop, Catholic University of America (2011)

- Chair and Organizer of Optical Phantom Short Course, Catholic University of America (2011)

-Chair of the Organizing Committee for Metropolitan Biophotonics Symposium, Washington, DC. (2009, 2010, 2011, 2012,2013,2014)

-Program Committee Member and Session Chair, Photonics in Dermatology and Plastic Surgery, Photonics West SPIE, San Francisco, CA. (2010-Present)

-Program Committee Member and Session Chair, Optical Interactions with tissue and cells XVIII, Photonics West SPIE, San Francisco, CA. (2010, 2011, 2012)

-Organizing Committee Member, IEEE LEOS Annual Meeting, Biophotonics. (2008, 2009,2010, 2011, 2012)

-Organizing Committee Member 1st International Biophotonics Meeting in Israel Tel Aviv University, Tel Aviv, Israel (2012)

-Organizing Committee Member, CLEO Annual Meeting. (2010, 2011)

-Panelist for the Southern Biomedical Engineering Career Conference, Translational Research Section, Washington, DC. (2009)

-Program Committee Member, Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside, Bethesda, MD. (2009, 2010, 2011)

-Grant Reviewer for the Israel Science Foundation, Israel. (2009, 2010)

-Grant Reviewer for the Material Command, Congressionally Directed Medical Research Program (CDMRP). (2008)

-Organizing Committee Member, IEEE Advances in Nanobiophotonics Conference, Mexico. (2008)

-Referee, American Society of Mechanical Engineers Proceedings.

-Referee, Applied Optics.

-Referee, Journal of Biomedical Optics.

-Referee, IEEE J. of Selected Topics in Quantum Electronics.

-Referee, Optics Express.

-Referee, BioMedical Engineering OnLine.

-Referee, Journal of Physics D: Applied Physics.

-Grant Reviewer for the Agency for Science, Technology and Research's (A*STAR) Biomedical Research Council (BMRC), Singapore.

-Member of the International Society for Optical Engineering.

-Member of the Johns Hopkins University Postdoctoral Association.

-Member of the American Society for Laser Medicine and Surgery.

-Member of the Italian Professional Engineer Association.

PEER REVIEWED PAPERS

1. S. L. Jacques, J.R. Roman, K. Lee. “Imaging Superficial Tissues with Polarized Light,” *Lasers Surg. Med,* 26, 119-129. (2000).

2. S.L. Jacques, J.C. Ramella-Roman, K. Lee. "Imaging skin pathology with polarized light," *J. of Biomedical Optics*, 7, 329-340, (2002).).

3. J.C. Ramella-Roman, P.R. Bargo, S.A. Prahl, and S.L. Jacques. "Evaluation of spherical particle sizes with an asymmetric illumination microscope," *IEEE J. of Selected Topics in Quantum Electronics*, 9, 301–307, (2003).

4. J.C. Ramella-Roman, K. Lee, S.A. Prahl, S.L. Jacques. "Design, testing and clinical studies of a hand-held polarized light camera," *J. of Biomedical Optics*, 9, 1305-1310, (2004).

5. J.C. Ramella-Roman, S.A. Prahl , S.L. Jacques, "Three Monte Carlo programs of polarized light transport into scattering media: part I," *Optics Express*, 13, 4420-4438, (2005).

6. J.C. Ramella-Roman, S.A. Prahl, S.L. Jacques, "Three Monte Carlo programs of polarized light transport into scattering media: part II," *Optics Express*, 13, 10392-10405, (2005).

7. B. Boulbry, J.C. Ramella-Roman, T.A. Germer, "Self-consistent calibration of a spectroellipsometer using a Fresnel rhomb as a reference sample," *Applied Optics*, 46, 8533-8541, (2007).

8. J.C. Ramella-Roman, S.A. Mathews, "Spectroscopic Measurements of Oxygen Saturation in the Retina," (Invited Paper, *IEEE J. of Selected Topics in Quantum Electronics*, 13, 1697-1703, (2007).

9. J.C. Ramella-Roman, S.A. Mathews, H. Kandimalla, A. Nabili, D.D. Duncan, S.A. D'Anna, S.M. Shah, Q.Q. Nguyen, "Measurement of oxygen saturation in the retina with a spectroscopic sensitive multi aperture camera," *Optics Express*, 16, 6170-6182, (2008).

10. J.C. Ramella-Roman and J. M. Hidler, "The Impact of Autonomic Dysreflexia on Blood Flow and Skin Response in Individuals with Spinal Cord Injury," *Advances in Optical Technologies*, 2008, Article ID 797214, doi:10.1155/2008/797214. (2008).

11. P. Lemaillet and J.C. Ramella-Roman, "An eye phantom for measurement of retinal oxygenation," *J. of Biomedical Optics*, 14, 064008, (2009).

12. A. Basiri, M. Nabili, S. Mathews, A. Libin, S. Groah, H. J. Noordmans, J.C. Ramella-Roman, "Use of a multi-aperture camera in the characterization of skin wounds," *Optics Express*, 18, 3244-3257, (2010).

13. A. D. Jaskille, J.C. Ramella-Roman, J. W. Shupp, M. H. Jordan, J.C. Jeng, "Techniques of Burn Depth Assessment – Part II: Critical Review of the Laser Doppler Technology," *Burns*, 36, 151-157, (2010).

14. D.D. Duncan, P. Lemaillet, M. Ibrahim, Q.D. Nguyen, M. Hiller, J.C. Ramella-Roman, "Absolute blood velocity measured with a modified fundus camera," *Journal of Biomedical Optics*, 15, 056014 (2010).

15. P. Lemaillet, D.Duncan, A. Lompado, Q.D. Nguyen, J.C. Ramella-Roman, "Retinal spectral imaging and blood flow measurement," *Journal of Innovative Optical Health Sciences (Special Issue)*, 3, 4, 255-265, (2010).

16. S.L. Groah, A. Libin , M. Spungen , K.L. Nguyen , E. Woods, M. Nabili, J.C. Ramella-Roman, D. Barritault "Regenerating matrix-based therapy for chronic wound healing: a prospective within-subject pilot study," *Int. Wound J.* 2010 doi: 10.1111/j.1742-481X.2010.00748.x (2010).

17. J.C. Ramella-Roman, A. Basiri, J. Hidler, I. Ljungberg, S.L. Groah, "Autonomic Dysreflexia in spinal cord injury: its role in altering skin perfusion and oxygenation," *Top. Spinal. Cord. Inj. Rehabil*. 16 46-57 (2011).

18. S.L. Groah, J.C. Ramella-Roman, A. Libin, M. Maitland Schladen, "Skin Microvascular and metabolic response to sitting and pressure relief maneuvers in people with spinal cord injury," *Top Spinal Cord Inj Rehabil*, 16(3) 33-45 doi:10.1310/sci1603 33 (2011).

19. C. Weinard, A. Nabili, M. Khumar, J. Dunn, J.C. Ramella-Roman, J. Jeng, M. Jordan, R. Baker, Yasuhiko T., "Factors of Osteogenesis influencing various human stem cells on smart gelatin/β-TCP scaffolds," *Rejuvenation Res.* 14 185-94. (2011).

20. J.C. Ramella-Roman, A. Nayak, S.A. Prahl, "Spectroscopic sensitive polarimeter for biomedical applications," *J. Biomed*. Opt. 16, 047001, doi:10.1117/1.3561907 (2011).

21. D.L. Edelstein, F.M. Giardiello, A. Basiri, L.M. Hylind, K. Romans, J.E. Axilbund, M. Cruz-Correa and J.C. Ramella-Roman "A new phenotypic manifestation of familial adenomatous polyposis," *Familial Cancer* doi: 10.1007/s10689-011-9432-3O (2011).

22. A. Basiri, D. L. Edelstein, J. Graham, A. Nabili, F. M. Giardiello, J. C. Ramella-Roman "Detection of familial adenomatous polyposis with orthogonal polarized spectroscopy of the oral mucosa vasculature," Journal of Biophotonics, Volume 4, Issue 10, pages 707–714, October 2011

23. T.A. Nguyen, J.W. Shupp, L.T. Moffatt, M.H. Jordan, J.C. Jeng, E. Leto, and J.C. Ramella-Roman "Assessment the viability of electrical injury using Spatial Frequency Domain Imaging in an in vivo electrical injury model," *IEEE J. of Selected Topics in Quantum Electronics* 10.1109/JSTQE.2011.2179525 (2011)

24. J.W. Shupp, L.T. Moffatt, T.A. Nguyen, J.C. Ramella-Roman, R. Hammamieh, R.J. Leto, D.Y. Jo, P.R. Randad, M. Jett, J.C. Jeng, and M.H. Jordan "Examination of Local and Systemic In vivo Responses to Electrical Injury Using an Electrical Burn Delivery System," *Journal of Burn Care & Research*, 33 – 1 (2012)

25. L. Luu, P. A. Roman, Scott A. Mathews, J.C. Ramella-Roman, "Microfluidics based phantoms of superficial vascular network," Biomedical Optics Express, 3(6), 1350-1364, (2012)

26. Thu T.A. Nguyen, Hanh N.D. Le, Minh Vo, Zhaoyang Wang, Long Luu, and Jessica C. Ramella-Roman, "Three-dimensional phantoms for curvature correction in spatial frequency domain imaging," Biomedical Optics Express, 3(6), 1200-1214, (2012)

27. Q. Wang, Du Le, J.C. Ramella-Roman and J. Pfefer, "Broadband UV-Vis optical property measurement in layered turbid media," Biomedical Optics Express 3(6), 1226-1240, (2012)

28. J. Hwang, J.C. Ramella-Roman, and R. Nordstrom, "Introduction: Feature Issue on Phantoms for the Performance Evaluation and Validation of Optical Medical Imaging Devices," Biomedical Optics Express, 3(6), 1399-1403 (2012)

29. Pejhman Ghassemi, Paul Lemaillet, Thomas A. Germer, Jeffrey W. Shupp, Suraj S. Venna, Marc E. Boisvert, Katherine E. Flanagan, Marion H. Jordan, and Jessica C. Ramella-Roman, "Out-of-plane Stokes imaging polarimeter for early skin cancer diagnosis," J. Biomed. Opt. 17, 076014 (2012), DOI:10.1117/1.JBO.17.7.076014

30. Du V. N. Le; Quanzeng Wang; Jessica C. Ramella-Roman; T. Joshua Pfefer, "Monte Carlo modeling of light-tissue interactions in narrow band imaging," J. Biomed. Opt. 18 (1), 010504 (2012); doi: 10.1117/1.JBO.18.1.010504

31. Nguyen, Thu T. A.; Ramella-Roman, Jessica C.; Moffatt, Lauren T.; Ortiz, Rachel T.; Jordan, Marion H.; Shupp, Jeffrey W., "Novel Application of a Spatial Frequency Domain Imaging System to Determine Signature Spectral Differences Between Infected and Noninfected Burn Wounds," Journal of Burn Care & Research, 34 - 1 44–50 (2013) (2012 Burke/Yannas Bioengineering Award)

32. Xuan Liu, Jessica C. Ramella-Roman, Jin Kang, "Robust spectral-domain optical coherence tomography speckle model and its cross-correlation coefficient analysis," JOSA A 30, 1, 51–59 (2013)

33. Xuan Liu, Yong Huang, Jessica C. Ramella-Roman, Scott A. Mathews, and Jin U. Kang, "Quantitative transverse flow measurement using optical coherence tomography speckle decorrelation analysis," Opt. Lett. 38, 805-807 (2013)

34. Taryn E Travis, Matthew Mino, Lauren Moffatt, Neil Mauskar, Pejhman Ghassemi, Jessica Ramella-Roman, Marion H Jordan, Jeffrey W. Shupp, "Biphasic Presence of Fibrocytes in a Porcine Hypertrophic Scar Model," Journal of Burn Care & Rehabilitation, 34:2, (2013).

35. Du V. N. Le, Quanzeng Wang, Taylor Gould, Jessica C. Ramella-Roman and T. Joshua Pfefer, "Vascular Contrast in Narrow Band and White Light Imaging," Applied Optics, Vol. 53, Issue 18, pp. 4061-4071 (2014) http://dx.doi.org/10.1364/AO.53.004061

36. Jianting Wang, James Coburn, Chia-Pin Liang, Nicholas Woolsey, Jessica C. Ramella-Roman, Yu Chen, and T. Joshua Pfefer, "Three-Dimensional Printing of Tissue Phantoms for Biophotonic Imaging," Optics Letters, Vol. 39, Issue 10, pp. 3010-3013 (2014)

37. Mamdouh Aloraefy, T. Joshua Pfefer, Jessica C. Ramella-Roman and Kim E. Sapsford, "In Vitro Evaluation of Fluorescence Glucose Biosensor Response," Sensors 2014, 14(7), 12127-12148; doi:10.3390/s140712127

38. Pejhman Ghassemi, Taryn E. Travis, Lauren T. Moffatt, Jeffrey W. Shupp, and Jessica C. Ramella-Roman, "A polarized multispectral imaging system for quantitative assessment of hypertrophic scars," Biomedical Optics Express, Vol. 5, Issue 10, pp. 3337-3354 (2014) http://dx.doi.org/10.1364/BOE.5.003337

39. T. E. Travis, P. Ghassemi, J.C. Ramella-Roman, N. J. Prindeze, D. W. Paul, L. T. Moffatt, M. H. Jordan, J. W. Shupp, "A Multimodal Assessment of Melanin and Melanocyte Activity in Abnormally Pigmented Hypertrophic Scar,"Journal of Burn Care & Research (3) 1. 2014

40. P. Ghassemi, J. Shupp, T. Travis, A. Gravunder, L. Moffatt, and J.C. Ramella-Roman, "A Portable Automatic Pressure Delivery System for Scar Compression Therapy in Large Animals," Rev. Sci. Instrum. 86, 015101, 2015

41. P. Ghassemi, L. T. Moffatt, J. W. Shupp and J.C. Ramella-Roman, "A new approach for optical assessment of directional anisotropy in turbid media," Journal of Biophotonics, 9999, 10.1002/jbio.201400124, 2015

42. D. W. Paul, P. Ghassemi, Jessica C. Ramella-Roman, N. Prindeze, L. T. Moffatt, A. Alkhalil; and J. W. Shupp, "Noninvasive Imaging Technologies for Cutaneous Wound Assessment: A Review," Wound Repair and Regeneration 10.1111/wrr.12262, 2015

43. A. Alkhalil, S. Tejiram, MD, T. E. Travis, MD, N. J. Prindeze, B. C. Carney, L. T. Moffatt, L. S. Johnson, J. C. Ramella-Roman, and J. W. Shupp, "A Translational Animal Model for Scar Compression Therapy Using an Automated Pressure Delivery System," Eplasty. 15: e29, 2015

44. P. Ghassemi, J. Wang, A. J. Melchiorri, J. C. Ramella-Roman, S. A. Mathews, J. C. Coburn, B. S.Sorg, Y. Chen, and J. Pfefera "Rapid prototyping of biomimetic vascular phantoms for hyperspectral reflectance imaging", In J. Biomed. Opt. 20(12) 121312 doi: 10.1117/1.JBO.20.12.121312, 2015

45. J. Chue-Sang, Y. Bai, S. Stoff, D. Straton, S. Ramaswamy, J. C. Ramella-Roman, "Use of a combined polarization-sensitive optical coherence tomography system and Mueller matrix imaging polarimetry for the polarimetric characterization of excised biological tissue," J. Biomed. Opt. 21(7) 071109 doi: 10.1117/1.JBO.21.7.071109, 2016

46. Rincon K, Shah P, Ramella-Roman J, Bhansali S., "A Review of Engineering Approaches for Lymphedema Detection.," IEEE Rev Biomed Eng. 2016;9:79-90. doi: 10.1109/RBME.2016.2582178. Epub 2016 Jun 20.

47. Daniel Rodriguez, Pedro Lopez, Jessica C. Ramella-Roman, "A Monte Carlo Analysis of Error Associated With Two-Wavelength Algorithms for Retinal Oximetry," Investigative Ophthalmology & Visual Science November 2016, Vol.57, 6474-6481. doi:10.1167/iovs.16-20138

48. Yinchen Song, Jessica C. Ramella-Roman, Mohammad Soltani and Wei-Chiang Lin, "Quantitative assessment of hemodynamic and structural characteristics of in vivo brain tissue using total diffuse reflectance spectrum measured in a non-contact fashion," Biomedical Optics Express, In Print

BOOK CHAPTERS

1. S.L. Jacques, S.L. and J.C. Ramella-Roman, "Polarized light imaging of tissue." In Laser and current optical techniques in biology, Comprehensive series in Photo-Sciences, 5, Giuseppe Palumbo and Riccardo Pratesi Editors, ESP book series (2004).

2. J.C. Ramella-Roman, "MonteCarlo models of polarized light into scattering media," NATOASI on Optical Waveguide Sensing and Imaging, Springler. In Optical Waveguide Sensing and Imaging, Nato Science for Peace and Security Series B: Physics and Biophotonics, (2007).

3. J.C. Ramella-Roman, "Polarized light scattering in skin, hemispherical scattering," NATO ASI on Optical Waveguide Sensing and Imaging, Springler. In Optical Waveguide Sensing and Imaging, Nato Science for Peace and Security Series B: Physics and Biophotonics, (2007).
4. S. Kirkpatrick, D. Duncan, and J.C. Ramella-Roman, "Monitoring of Blood Flow and Hemoglobin Oxygenation," Handbook of Biophotonics, 2, Wiley-VCH Editors, (2011)
5. Md Ashfaq Ahmed, Yuqiang Bai, J.C. Ramella-Roman, R. Jung, "Neurophotonics for peripheral nerves", Textbook of NeuroPhotonics and Brain Mapping, in Print

PROCEEDINGS

1. S.L. Jacques, and J.C. Roman "Propagation of polarized light beams through biological tissues," *SPIE Proceedings on Laser-Tissue Interaction XI: Photochemical, Photothermal, and Photomechanical*, 3914, 345-352, (2000).
2. S.L. Jacques, J.R. Roman, K. Lee "Imaging of superficial tissues with polarized light," 2000 Annual Fall Meeting of the Biomedical Engineering Society; Washington, WA, USA; 12 October 2000 through 14 October 2000;
3. J.C. Ramella-Roman, and S.L. Jacques "Imaging of superficial tissues with polarized light," *Biomedical Optical Spectroscopy and Diagnostics*, T. Li, ed., 38 of OSA Trends in Optics and Photonics, (2000).
4. S.L. Jacques, J.C. Ramella Roman, A. Moody. "Characterizing microscopic domains of birefringence in thin tissue sections," *SPIE Proceedings on Laser-Tissue Interaction XII: Photochemical, Photothermal, and Photomechanical*, 4257, 464-468, (2001).
5. J.C. Ramella-Roman, and S.L. Jacques, "Mueller matrix description of collimated light transmission through liver, muscle and skin," *SPIE Proceedings on Laser-Tissue Interaction XII: Photochemical, Photothermal, and Photomechanical*, 4257, 110-116, (2001).
6. J.C. Ramella-Roman, S.L. Jacques. "Monte Carlo simulations and experiments on imaging tissues with polarized light," *SPIE Proceedings on Laser-Tissue Interaction XIII: Photochemical, Photothermal, and Photomechanical*, 4617, 2002.
7. J.C. Ramella-Roman, K. Lee, S.A. Prahl, S.L. Jacques. "Hand-held polarized light camera for imaging skin pathology," *SPIE Saratov Fall Meeting Optical Technologies in Biophysics and Medicine IV*, 5068, 284-293, (2003).
8. S.L. Jacques, J.C. Ramella-Roman, and K. Lee, "Imaging of superficial tissue layers using polarized light with a held-camera," *SPIE Proceedings on Photonics and Imaging in Biology and Medicine*, 5254, 14-23, (2003).
9. J.C. Ramella-Roman, D. Duncan, T. A. Germer "Out of plane Polarimetric imaging of skin: surface and subsurface effects," *SPIE Proceedings on Photonic Therapeutics and Diagnostics*, 5686, 142-153, 2005.
10. J.C. Ramella-Roman, D. Duncan, "A new approach to Mueller matrix reconstruction of skin cancer lesions using a dual rotating retarder polarimeter," *SPIE Proceedings on Advanced Biomedical and Clinical Diagnostic Systems IV*, 6080, 60800M, (2006).
11. J.C. Ramella-Roman, B. Boulbry, T. A. Germer, "Hemispherical imaging of skin with polarized light," *SPIE Saratov Fall Meeting Optical Technologies in Biophysics and Medicine VIII*, 6535, 65350U, (2006).
12. M. B. Airola, D. D. Duncan; J. C. Ramella-Roman, "Remote detection of airborne biological species," *Defense Security Symposium SPIE*, FL 2006
13. B. Boulbry, T. A. Germer, and J.C. Ramella-Roman, "A novel hemispherical spectro-polarimetric scattering instrument for skin lesions imaging" *SPIE Proceedings on Photonic Therapeutics and Diagnostics II*, 6078, 60780R, (2006).
14. J.C. Ramella-Roman, H.Kandimalla, R.Dinga, A.Nabili, S.Mathews, Q. D. Nguyen "A lenslet-based device for measuring oxygen saturation in the retina," *SPIE Proceedings on Ophthalmic Technologies XVII*, 6426, 64261J, (2007).

15. B. Boulbry, J. C. Ramella-Roman, T. A. Germer, "Truncated singular value decomposition method for calibrating a Stokes polarimeter," *SPIE Proceedings on Polarization Science and Remote Sensing III*, 6682, 66820M, (2007).

16. N. Gupta and J.C. Ramella-Roman, "Detection of blood oxygen level by noninvasive passivespectral imaging of skin," *SPIE Proceedings on Photonic Therapeutics and Diagnostics IV*, 6842, 68420C, (2008).

17. H. Kandimalla, J.C. Ramella-Roman, "Polarized fluorescence for skin cancer diagnostic with amulti-aperture camera," *SPIE Proceedings on Photonic Therapeutics and Diagnostics IV*, 6842, 68420J, (2008).

18. J.C. Ramella-Roman, J.M. Hidler, "A fiber optic probe for measurement of an autonomic dysreflexia event on SCI patients," *SPIE Proceedings on Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications VIII*, 6852, 685202, (2008).

19. A. Nabili, D. Bardakci, K. Helling, C. Matyas, S. Muro, and J.C. Ramella-Roman, "Calibration of a retinal oximeter with a dynamic eye phantom," *SPIE Proceedings on Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurements of Tissue*, 6870, 68700N, (2008).

20. J.C. Ramella-Roman, O.C. Wilson, "Optical properties of a new inorganic liquid crystal," *Digest of the IEEE/LEOS Summer Topical Meetings*, 21-23, 77-78, (2008).

21. P. Lemaillet, A. Lompado, J. C. Ramella-Roman, "Improvement of a snapshot spectroscopic retinal multi-aperture imaging camera," *SPIE Proceedings on Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, 7262, 72622G, (2009).

22. J.C. Ramella-Roman, A. Pfefer, J. Hidler, "Quantitative assessment of autonomic dysreflexia with combined spectroscopic and perfusion probes," *SPIE Proceedings on Advanced Biomedical and Clinical Diagnostic Systems VII*, 7169, 716916, (2009).

23. J.C. Ramella-Roman, M. Nabili, A. Libin, M. Spungen, E. Woods, S. Groah, "Use of a multi-aperture spectral camera for the assessment of skin wound healing," *Lasers in Surgery and Medicine*, Supplement: American Society for Laser Medicine and Surgery Twenty-Ninth Annual Conference, 41, 151–154, (2009).

24. J.C Ramella-Roman, A. Nayak, "Spectroscopic Stokes vector polarimetry for biomedical applications," *IEEE/LEOS Annual Meeting Conference Proceedings*, 463-464, (2009).

25. M. Nabili, A. Libin, L. Kim, S. Groah, J.C. Ramella-Roman, "Assessment of skin wound healing with a multi-aperture camera," *SPIE Proceedings on Photonic Therapeutics and Diagnostics V*, 7161, 7161A, (2009).

26. P. Lemaillet, A. Lompado, J.C. Ramella-Roman, "Retinal oximetry with a multi-aperture camera," *SPIE Proceedings on Ophthalmic Technologies XX*, 7550, 755021, (2010).

27. T.A. Nguyen, A. Basiri, J.C. Ramella-Roman, "Imaging spectroscopy of thermal and electrical burs," *SPIE Proceedings on Photonics in Dermatology and Plastic Surgery*, 7548,7548A, (2010).

28. J.C. Ramella-Roman, T.A. Nguyen, A.R. Pavlovich, P. Lemaillet, M.H. Jordan, J.W. Shupp, "A novel instrument aimed at measuring hypertrophic scar formation," *Journal of Physics: Conference Series, Poem*, (2010).

29. T. T. A. Nguyen, A. Basiri, J.W. Shupp, L.T. Moffatt, M.H. Jordan, J.C. Jeng, E. Leto and J.C. Ramella-Roman, "Assessment of electrical burn injury using structured illumination in an in-vivo electrical injury model," *Proc. SPIE* 7999, 79990D (2010); doi:10.1117/12.890313

30. A. Basiri, T. A. Nguyen, M. Ibrahim, Q. D. Nguyen and Jessica C. Ramella-Roman, "Measuring the retina optical properties using a structured illumination imaging system," *Proc. SPIE* 7885, 78851X (2011); doi:10.1117/12.875146

31. Paul Lemaillet and J. C. Ramella-Roman, "Hemispherical Stokes polarimeter for early cancer diagnosis," *Proc. SPIE* 7883, 788304 (2011); doi:10.1117/12.873608

32. J.C. Ramella-Roman, T.A. Nguyen, A.R. Pavlovich, P. Lemaillet, M.H. Jordan, J. W. Shupp, “A novel instrument aimed at measuring hypertrophic scar formation,” Journal of Physics:ConferenceSeries 277 (2011) 012002

33. Thu A. Nguyen, Jeffrey W. Shupp, Lauren T. Moffatt, James C. Jeng, Marion H. Jordan, Jessica C. Ramella-Roman, “Modeling of skin cooling, blood flow, and optical properties in wounds created by electrical shock,” *(Invited Paper) Proc. SPIE* 8207A-05 (2012, In print)

34. P. Ghassemi, J. W. Shupp, S. Venna, M. E. Boisvert, K. E. Flanagan, M. H. Jordan and J. C. Ramella-Roman, “Combination of Stokes polarized light imaging, roughness metrics and morphological features for the detection of melanoma,” Proc. SPIE 8207, 82070H (2012)

35. Yong- Ping Chen, Jiefeng Xi, Jiasong Li, Jessica Mavadia, Jessica C. Ramella-Roman, Xingde D. Li, “Gold nanocages with enhanced scattering as OCT contrast agents,” *Proc. SPIE* 8213-97 (2012)

36. Quanzeng Wang, Du Le, Anant Agrawal, Jessica C. Ramella-Roman, Joshua Pfefer, “Visualization of mucosal vasculature with narrow-band imaging: a theoretical study,” *Proc. SPIE* 8215-04 (2012)

37. Mamdouh Aloraefy ; Joshua Pfefer ; Jessica Ramella-Roman ; Kim Sapsford, “Development and testing of a fluorescence biosensor for glucose sensing,” Proc. SPIE 8367, Smart Biomedical and Physiological Sensor Technology IX, 83670H 2012

38. Pejhman Ghassemi, Jeffrey W. Shupp M.D., Lauren T. Moffatt, Jessica C. Ramella-Roman, “A novel spectral imaging system for quantitative analysis of hypertrophic scar,” Proc. SPIE 8565: Photonic Therapeutics and Diagnostics IX, 2013

39. Quanzeng Wang, Jessica C. Ramella-Roman, Joshua Pfefer, “Spectral variations in narrow band imaging depth-selectivity: mucosal scattering vs. hemoglobin absorption,” Proc. SPIE 8573: Design and Quality for Biomedical Technologies VI, 2013

40. Jessica C. Ramella-Roman, Du V. N. Le, Pejhman Ghassemi, Thu Nguyen, Alison Lichy, Suzanne Groah, “Skin microvascular and metabolic response to pressure relief maneuvers in people with spinal cord injury,” Proc. SPIE 8579: Optical Interactions with Tissue and Cells XXIV, 2013

41. Jessica C. Ramella-Roman, Thuan Ho, Du Le ; Pejhman Ghassemi, Thu Nguyen, Alison Lichy, Suzanne Groah, “Monitoring the impact of pressure on the assessment of skin perfusion and oxygenation using a novel pressure device,” Proc. SPIE 8576, Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII, 85760N (March 20, 2013); doi:10.1117/12.2006256

42. Xuan Liu, Yung Huang, Jessica C. Ramella-Roman, and Jin Kang, “Quantitative transverse flow assessment using OCT speckle decorrelation analysis,” SPIE BIOS 2013

43. Jianting Wang, James Coburn, Nicholas Woolsey, Du Le, Jessica C. Ramella-Roman, Yu Chen, and Joshua Pfefer, “Characterization and Application of 3D Printed Phantoms for Biophotonic Imaging,” SPIE DSS 2013

44. Thu T.A. Nguyen, Jeffrey W. Shupp, Lauren T. Moffatt, Jessica C. Ramella-Roman "Construction of a digital and physical mouse model aimed at the study of electrical shock," SPIE 8945, Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue VI, 894508 (3 March 2014); doi: 10.1117/12.2039661

45. Jianting Wang, James Coburn, Nicholas Woolsey, Chia-Pin Liang, Jessica Ramella-Roman Yu Chen, and Joshua Pfefer "Quantitative Assessment of Biophotonic Imaging System Performance with Phantoms Fabricated by Rapid Prototyping SPIE 8936, Design and Quality for Biomedical Technologies VII, 89360M (10 March 2014); doi: 10.1117/12.2044089

46. Pejhman Ghassemi, Taryn E. Travis, Jeffrey W. Shupp, Lauren T. Moffatt, Jessica C. Ramella-Roman, "Monitoring the influence of compression therapy on pathophysiology and structure of a swine scar model using multispectral imaging system", SPIE 8926, Photonic Therapeutics and Diagnostics X, 892606 (4 March 2014); doi: 10.1117/12.2037373

47. Thuan Ho, Ahn Thu Nguyen, Alyson Lichy, Suzanne Groah, Jessica C. Ramella-Roman, The efficacy of Pressure Relief Maneuvers in Spinal Cord Injury Patients, a clinical study, *Proc. SPIE* 8938, Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIV, 89380U (February 26, 2014); doi:10.1117/12.2039545

48. Jianting Wang, Pejhman Ghassemi, Anthony Melchiorri, Jessica Ramella-Roman, Scott A. Mathews, James Coburn, Brian S. Sorg, Yu Chen, Joshua Pfefer, "3D printed biomimetic vascular phantoms for assessment of hyperspectral imaging systems", in Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue VII, David W. Allen; Jean-Pierre Bouchard, Editors, Proceedings of SPIE Vol. 9325 (SPIE, Bellingham, WA 2015), 932508.

49. Jessica C. Ramella-Roman, S. Winhoven, "The role of camera and illumination choices in absolute blood velocity measurements", in Dynamics and Fluctuations in Biomedical Photonics XII, Valery V. Tuchin; Kirill V. Larin; Martin J. Leahy; Ruikang K. Wang, Editors, Proceedings of SPIE Vol. 9322 (SPIE, Bellingham, WA 2015), 93220S.

50. J. C. Ramella-Roman, T. Ruiz, P. Ghassemi, T. E. Travis, J. W. Shupp, J. Chue-Sang, Y. Bai, "Preferential alignment of birefringent tissue measured with polarization sensitive techniques", in Photonic Therapeutics and Diagnostics XI, Andreas Mandelis; Bernard Choi; Brian J. F. Wong M.D.; Guillermo J. Tearney M.D.; Hyun Wook Kang; Melissa C. Skala; Justus F. Ilgner M.D.; Kenton W. Gregory M.D.; Mark W. Dewhirst D.V.M.; Nikiforos Kollias; Alfred Nuttal; Haishan Zeng; Laura Marcu; Claus-Peter Richter, Editors, Proceedings of SPIE Vol. 9303 (SPIE, Bellingham, WA 2015), 93030I.

51. Susan Stoff, Joseph Chue-Sang, Nola A. Holness, Amir Gandjbakhche, Viktor Chernomordik, Jessica Ramella-Roman, “Cervical collagen imaging for determining preterm labor risks using a colposcope with full mueller matrix capability,” (SPIE, Bellingham, WA 2015) Proc. SPIE 9689, Photonic Therapeutics and Diagnostics XII, 968947 (February 29, 2016); doi:10.1117/12.2213387

OTHER PUBLICATIONS

Jessica Ramella-Roman, Thu Ann Nguyen, Lauren T. Moffatt, Marion H. Jordan, and Jeff Shupp, “Better evaluation of electric shock injuries,” SPIE Newsroom http://spie.org/x86673.xml (2012)

Jessica Ramella-Roman review in Spotlight in Optics of “Reflectance confocal microscopy of optical phantoms,” published in Biomedical Optics Express, Vol. 3 Issue 6, pp.1162-1172 (2012)

The paper by Long Luu, Patrick A. Roman, Scott A. Mathews, Jessica C. Ramella-Roman, “Microfluidics based phantoms of superficial vascular network,” Biomedical Optics Express, 3(6), 1350-1364, (2012) was highlighter in Spotlight in Optics (http://www.opticsinfobase.org/spotlight/summary.cfm?uri=boe-3-6-1350)

GRANTS AND CONTRACTS

Ongoing Research Support

1. Role: coI - Agency: NIH. Role of Ocular and Retinal Blood Flow in Visual Function Changes in Retinitis Pigmentosa. (R21, Awarded)

Past Grants

1. Role: Co-Investigator - Agency: NIH-NEI. Type: R01. RO1EY017577 Novel Assessment of Early Changes in Diabetic Retinopathy. , (Awarded $1,775,811. 2008-2011)

2. Role: PI - Agency: NIST. Retinal Oximeter using hyperspectral imaging for assessment of early signs of Diabetic Retinopathy. (Awarded $74,028. 2009-2011)

3. Role: PI - Agency: Coulter Foundation. Retinal Oximeter using Novel Multi-aperture Camera for assessment of early signs of Diabetic Retinopathy. (Awarded $240,000. 2007-2009)

4. Role: PI - Agency: Christopher Reeve Foundation. Skin hypoxia and the formation of skin ulcer in individuals with autonomic dysreflexia. (Awarded $150,000. 2007-2009)

5. Role: PI - Agency: Christopher Reeve Foundation. Measurement of autonomic dysreflexia on the rat model. (Awarded $5,000. 2008-2009)

6. Role: Co-Investigator - Agency: Defense Microelectronics activity contracting division subcontract from CUA Electrical Engineering. Periodic. (Awarded $40,000. 2007-2009)

7. Role: PI - Agency: Johns Hopkins University, APL. Characterization of skin optical response for human signatures characterization. (Awarded $25,000. 2007)

8. Role: PI - Agency: NICHD/NINDS, Type: HD050845. The influence of skin hypoxia in the formation of skin ulcer and skin thickening in individuals with autonomic dysreflexia. (Awarded $25,000. 2006-2007)

9. Role: Co-Investigator - Agency: Disruptive Technology Office (DTO), subcontract from The University of New Mexico. Compact Multi-Aperture Camera. (Awarded $12,000. 2006)

10. Role: PI - Agency: Johns Hopkins University, APL. Evaluation of Biophotonics Techniques. (Awarded $25,000. 2005-2006)

11. Role: PI - Agency: NIST. Type: Conference. Organize an international workshop on optical phantoms at CUA. (Awarded $25,000, 2011-2012)

12. Role: PI - Agency: NIH. Type: R15. Novel Imaging System to Objectively Assess the Natural History of Treated and Untreated Hypertrophic Scar Formation. (Awarded $408,664, 2011-2014)

13. Role: PI - Agency: U.S. Department of Education and the National Institute on Disability and Rehabilitation Research consortium. Skin Microvascular and Metabolic Response to Sitting and Pressure Relief Maneuvers in People with Spinal Cord Injury. (Awarded $170,000. 2010-2014)

PATENTS

RAMELLA-ROMAN, Jessica, Mark MIROTZNIK, and Scott MATHEWS. "LENSLET ARRAY FOR RETINAL OXIMETRY." US7997732 Issued Aug 16, 2011

RAMELLA-ROMAN, Jessica, Mark MIROTZNIK, and Scott MATHEWS. "LENSLET ARRAY FOR RETINAL OXIMETRY." US8308299 Issued Nov 13, 2012

INVITED TALKS – Speaker J.C. Ramella-Roman

1. NIH mock study session on the peer review process for NIH grants. SPIE Photonics West 2001.

2. Biomedical Sensors, Department of Electrical Engineering, Oregon Graduate Institute of Science and 15. Engineering, Portland, OR. Part of the Semiconductor Sensors class, 2002.

3. Imaging skin pathologies with polarized light: empirical and theoretical studies, National Institute of Standards, Gaithersburg, MD, 2004.

4. Out of plane polarimetry for skin lesion imaging, George Washington University, Washington, DC, 2005.

5. Polarized light imaging of skin surface effects, NATO--Advanced Study Institute, Optical Waveguide sensing and imaging in medicine, environment, security and imaging, Ottawa Canada, 2006.

6. Polarized light Monte Carlo, NATO-Advanced Study Institute, Optical waveguide sensing and imaging in medicine, environment, security and imaging, Ottawa Canada, 2006.

7. A lenslet-based device for measuring oxygen saturation in the retina and other biomedical applications, Catholic University of America, Biology Department, 2007.

8. Spectroscopic measurement of oxygen saturation in the retina, Food and Drug Administration, Modern Topics in Biomedical Optics, 2007.

9. The impact of autonomic dysreflexia on SCI patients skin and its role in skin ulcer formation, Christopher and Dana Reeve Foundation Meeting, Atlanta, GA, 2008.

10. Impact of autonomic dysreflexia on the SCI patient skin, ICORD, British Columbia CA, 2009.

11. Imaging spectroscopy with a multi-aperture camera, The Johns Hopkins University, Electrical Engineering Department, Baltimore, MD, 2009.

12. Imaging spectroscopy with a multi-aperture camera, The Burn Center at the Washington Hospital, Washington, DC, 2009.

13. Evaluation of optical properties of biological tissue with spectroscopic imaging, George Mason University,

Electrical Engineering Department, VA, 2010.

14. Novel approaches in optical medical imaging, University of Delaware, Electrical Engineering Department, DE, 2010.

15. Autonomic dysreflexia and the skin, Adventist Rehabilitation Hospital of Maryland, 2010.

16. A novel instrument aimed at measuring hypertrophic scar formation, Poem Conference Wuhan China, 2010

17. Extrapolation of skin optical properties with structured illumination and four phases algorithm, NIST Optical Medical Imaging Workshop 2010

18. OASIS Conference 2011, Tel Aviv, Israel

19. Novel approaches for spectral polarimetry of biological tissue 2011, University of Maryland Biomedical Engineering

20. Use of polarized light imaging and sensing in the clinical setting, a short course. La Plata Mexico, 2011

21. A study on retinal superficial vasculature and structure using a combined flow oximetry and OCT system

Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside, Bethesda MD.

22. Monitoring Electrical and Thermal Burns with Spatial Frequency Domain Imaging, SESAPS 2011 Annual

Meeting of American Physics Society, Roanoke VA, 2011

23. Monitoring of Electrical Burns, Washington Hospital Center, Washington DC, 2011

24. Optical Phantoms for retina spectroscopy, NIST optical phantom workshop, Washington DC, 2011

25. Modeling of skin cooling, blood flow, and optical properties in wounds created by electrical shock," SPIE San

Francisco, 2012

26. OSA Biomed Miami - "Assessment of the Natural History of Treated and Untreated Scars with a Novel Imaging

System System" April 2014

27. International Workshop on Tissue Phantoms and Standardization in Biophotonics "Phantoms for Multi-Spectral

imaging – retina oximetry" May 21st 2014

28. ICCB Conference, "Modeling of blood flow in the retina" Barcelona Spain, 9/2015 (**)

29. Michigan Tech University, 11/2015

30. SPIE Photonics West San Francisco, "The role of camera and illumination choices in absolute blood velocity measurements" San Francisco 2/2015

31. SPIE Photonics West San Francisco, " Imaging and modeling of collagen architecture in living tissue

with polarized light transfer " San Francisco 3/2016

ARVO Talks and Posters

1. Rachel E. Annam, Mohamed A. Ibrahim, Long Luu, Yasir J. Sepah, Millena G. Bittencourt, Owhofasa Agbedia, Hyun S. Jang, Jithin Yohannan, Jessica Ramella-Roman, Quan D. Nguyen. "Assessment of Oxygen Saturation in Retinal Vessels of Normal Subjects and Diabetic Patients without Retinopathy using the Johns Hopkins Flow Oximetry System," 6838/D1168:557 2012
2. Jessica C. Ramella-Roman, M A. Ibrahim, Y J. Sepah, D D. Duncan, B Cho, T A. Nguyen, A Basiri, B E. Munoz, S K. West, Q D. Nguyen "Measurement Of Macular Blood Flow And Oxygen Saturation In Normal Subjects And In Patients With Diabetes Mellitus With And Without Diabetic Retinopathy Using The Flow Oximetry System," 4417:448, 2011
3. J. Ramella-Roman1, P. Lemaillet, Q. Nguyen. "Development of a Snapshot Spectroscopic Multi-Aperture Retinal Imaging Camera," 1400/A226, 2009
4. P. Lemaillet1, J.C. Ramella Roman, Q. Nguyen "Construction of a Dynamic Eye Phantom for Retinal Oximetry Measurements," 3295/A313, 2009
5. J. Ramella-Roman, "Measurement of Retina Vascular Flow across Small and Large Vessel Size"

GRADUATE STUDENTS ADVISOR

Haripriya Kandimalla M.S., 2007

Afshin Nabili M.S., 2008

Marjian Nabili M.S., 2009

Ali Basiri Ph.D. 2013

Thu Nguyen Ph.D. 2012

Mamdouh Aloraefy, Ph.D. 2013

Pejhman Gahssemi, Ph.D. 2013

GRADUATE COURSES DEVELOPED

BME 494, Senior Project Laboratory, Spring 2009, 2010, 2011

BME 491, Seminars in Biomedical Engineering, Fall 2007

BME 581, Medical Imaging, Fall 2005, 2006, 2007, 2008, 2009,2010

BME 513, Biomedical Instrumentation, Spring 2006, 2007, 2008, 2010

BME 514, Biomedical Optics, Spring 2007, 2008, 2010, 2011

BME 515, Biomedical Signal Processing, Fall 2006

BME 681, Advanced Topics in Medical Imaging, Fall 2010

BME 4503C Medical Instrumentation Design, Online Course offered every semester at FIU.