Curriculum Vitae – Sean J. Kirkpatrick, Ph.D.

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Educational Background:

Ph.D. Biomechanics	University of Miami Coral Gables, FL	1992
B.S. Biology	Gannon University Erie, PA	1986

Professional Services:

2012-Present: *B. H. Barkalow & Associates, LLC*, Newaygo, MI. **Biomedical Engineering Expert Consultant** for hospitals, medical device companies, legal firms, and insurance carriers. Responsibilities consist of providing biomedical engineering support to clients that can include incident investigations, reports of findings, assistance with educational programs, as well as expert witness testimony.

2010-Present: *Michigan Technological University*, Houghton, MI. **Professor and Chair**, Department of Biomedical Engineering; **Adjunct Professor**, Department of Electrical and Computer Engineering.

2009-Present: *Portland State University*, Portland, OR. **Associate Professor (joint appointment)**, Department of Electrical and Computer Engineering.

2003-2010: *Oregon Health & Science University*, Hillsboro, OR. **Associate Professor of Biomedical Engineering**, Department of Biomedical Engineering.

- Established a dynamic, rigorous federally and privately funded research program in optical metrology for biomedical applications and the biomechanics of human tissues; supervised and educated graduate-level (M.S., Ph.D.) engineering students; wrote, received, implemented and managed federal (NSF, NIH) and private research grants; chaired and served-on strategic departmental committees; directly supervised technical staff.

1998-2003: *Oregon Graduate Institute of Science and Technology*, Hillsboro, OR. **Assistant Professor of Materials Science & Engineering, Assistant Professor of Electrical & Computer Engineering, Associate Professor of Electrical & Computer Engineering**.

- OGI merged with OHSU in 2000 forming the OGI School of Science & Engineering at OHSU.
- Established a federally and privately funded research program in optical metrology for biomedical and industrial applications, in particular for biomechanics of tissues; supervised and educated graduate-level (MS, Ph.D.) engineering students; wrote, received, implemented and managed federal (NSF, NIH) research grants.

2001-2003: *Oregon Medical Laser Center, Providence St. Vincent Hospital*, Portland, OR. **Senior Research Scientist**.

- Established a dynamic federally and privately funded research program in biomedical applications of optical sciences; directed Bio-Mechanical Evaluation Laboratory.

1996-2001: *Oregon Health & Science University*, Hillsboro, OR. **Assistant Professor of Biomaterials & Biomechanics**.

- Established a dynamic, rigorous federally and privately funded research program in optical metrology and biomaterials; instructed dental students and residents in the sciences of biomaterials & biomechanics.

1994-1996: *University of Nebraska Medical Center*, Omaha, NE. **Assistant Professor of Oral Biology**, **Faculty Associate**, Center for Materials Research & Analysis.

- Established a dynamic and rigorous research program in optical metrology for biomedical applications; instructed dental students and dental and medical residents in biomechanics.

1993-1994: *The Johns Hopkins Medical Institutions*, Baltimore, MD. **Senior Researcher**.

- Optical metrology.

1992-1993: *Towson State University*, Towson, MD. **Part-time Faculty**, Department of Biology.

- Instructor of Human Anatomy & Physiology.

Funding History:

2011, REF- Infrastructure Enhancement Grant for Direct Real-Time Nitric Oxide Analysis, Michigan Technological University, $20,322. Role: **Co-PI** (PI: Megan C. Frost).

2009-2010, Photothermal and Photomechanical effects of long pulsed laser radiation on skin structures, *n*Light Corporation, $10,000. Role: **PI**.

2007-2010, Optical Assessment of Skin Biomechanics, Johnson & Johnson, Inc., $95,000. Role: **PI**

2005-2008, Acousto-optical Elastography for Imaging Skin Cancers, NIH, #1R21CA10824, $250,000 (direct costs). Role: **PI**.

2003-2006, High Resolution Laser Speckle Strain Gauge for Biomedical Research and Diagnostics, NSF, #0352608, $192,144. Role: **PI**.

2003-2006, Teaching Module for Biomedical Optics (VANTH), NSF, #9876363, $162,510, Role: **Co-I** (PI at OHSU, Steven L. Jacques).

2003-2008, Biomedical Optics for Medical Research and Clinical Care, NIH, #5R24EB000224, $3,115,625. Role: **Co-PI** (PI: Steven L. Jacques).

2003-2004, Biophotonics: Acousto-optic Elastography, NSF, #0352492, $22,500. Role: **PI**.

2002-2003, High Resolution Laser Speckle Strain Gauge for Biomedical Research and Diagnostics, NSF, #0201841, $179,957. Role: **PI**.

2001-2003, Biophotonics: Acousto-optic Elastography, NSF, #0196172, $227,626. Role: **PI**.

2001-2004, High Resolution Laser Speckle Strain Gauge for Biomedical Research and Diagnostics, NSF, #0196173, $45,065. Role: **PI**.

2000-2001, Biophotonics: Acousto-optic Elastography, NSF, #0086719, $89,118. Role: **PI**.

1998-2001, High Resolution Laser Speckle Strain Gauge for Biomedical Research and Diagnostics, NSF, #9807497, $247,245 Role: **PI**.

1996, Equipment Grant: Instron Universal Testing Machine, University of Nebraska Foundation, $90,000. Role: **PI**.

1996, Equipment Grant, Research Grade Radiometer/Photometer, University of Nebraska Banker's Foundation, $8,700. Role: **PI**.

1995, Noncontact Strain Measurement in Cortical Bone, University of Nebraska Medical Center Seed Grant, $5,200. Role: **PI**.

1994, Mechanical Strain Measurement in individual Trabeculae Through the Use of Laser Speckle, University of Nebraska Medical Center Seed Grant, $2,802. Role: **PI**

1993, Noncontact Strain Measurements, JHU-APL Director's Fund, $80,000. Role: **Co-I** (PI: Donald D. Duncan, JHU-APL).

Total Grant and Contract Support to date: $4,843,814 (As PI, Co-PI, or Co-I)

Journal Publications (peer reviewed):

Kirkpatrick, SJ, Khaksari, K, Thomas, D, and Duncan, DD, "Optical vortex behavior in dynamic speckle fields," *J. Biomed Opt*., 17(5) 050504, 2012.

Wells-Gray, EM, Kirkpatrick, SJ, and Sakaguchi, RL, "A dynamic light scattering approach for monitoring dental composite curing kinetics," *Dent. Mater.*, 26, 634-6422, 2010 (online 7 April 2010, *doi:10.1016/j.dental2010.03.005*).

Jai, Y, Kirkpatrick, SJ, Hinds, MT, and Wang, RK, "Doppler optical coherence tomography imaging of local fluid flow and shear stress within microporous scaffolds," *J. Biomed. Opt*., 14, 034014, 2009.

Kirkpatrick, SJ, Duncan, DD, and Wells-Gray, EM, "Detrimental effects of speckle-pixel size matching in laser speckle contrast imaging," *Opt Lett*., 33, 2886-2888, 2008.

Duncan, DD and Kirkpatrick, SJ, "Can laser speckle flowmetry be made a quantitative tool?" *J. Opt. Soc. Am. A*, 25, 2088 - 2094 2008.

Kirkpatrick, SJ and Duncan, DD, "Performance of a gradient-based shift estimator in a spatially sparse data environment: Tracking the sub-pixel motion of fluorescently labeled particles," *J Microscopy*, 232, 64-72, 2008.

Duncan, DD, Kirkpatrick SJ, and Wang RK, "Statistics of local speckle contrast," *J. Opt. Soc. Am. A*, 25, 9-15, 2008.

Duncan, DD and Kirkpatrick, SJ, "The copula: a tool for simulating speckle dynamics," *J. Opt. Soc. Am. A*, 25, 231-238, 2008.

Vartanian, KB, Kirkpatrick, SJ, Hanson, SR, and Hinds, MT, "Endothelial cell cytoskeletal alignment independent of fluid shear stress on micropatterned surfaces," *Biochemical and*

Biophysical Research Communications, 371, 787-792, 2008.

Vartanian, KB, Kirkpatrick, SJ, McCarty, OJT, Vu, TQ, Hanson, SR, and Hinds, MT, "Distinct extracellular matrix microenvironments of progenitor and carotid endothelial cells," *J Biomed Mater Res A.*, Epub. Nov 4 2008.

Kirkpatrick, SJ, Duncan, DD, Wang, RK, and Hinds, MT, "Quantitative temporal speckle contrast imaging for tissue mechanics," *J. Opt. Soc. Am. A.*, 25, 231-238, 2007.

Wang, RK, Kirkpatrick, SJ, and Hinds, MT, "Phase-sensitive optical coherence elastography for mapping tissue microstrains in real time," *Appl. Physics Lett.*, 90, 164105, 2007.

Kirkpatrick, SJ, Wang, RK, and Duncan, DD, "OCT-based elastography for large and small deformations," *Opt. Express*, 14, 11585-11597, 2006.

Kirkpatrick, SJ, Wang, RK, Duncan, DD, Kulesz-Martin, M, and Lee, K, "Imaging the mechanics of skin lesions by in vivo acousto-optical elastography," *Opt. Express*, 14, 9771-9779, 2006.

Wang, RK and Kirkpatrick, SJ, "Tissue Doppler optical coherence elastography for strain rate and strain mapping of soft tissue in real time," *Appl. Physics Lett.*, 89, 144103, 2006.

Hinds, M, Rowe, RC, Ren, Z, Teach, J, Wu, PC, Kirkpatrick, SJ, Breneman, KD, Gregory, KW, and Courtman, DW, "Development of a reinforced porcine elastin composite vascular scaffold," *J Biomed Mat Res. A*, 77, 458-469, 2005.

Kirkpatrick, SJ, "A primer on radiometry," *Dental Materials*, 21, 21-26, 2005.

Kirkpatrick, SJ Duncan, DD, Fang, Li, "Low frequency surface wave propagation and the viscoelastic behavior of porcine skin," *J Biomed Opt.*, 9, 1311-1319, 2004.

Kirkpatrick, SJ, Hinds, MT, and Duncan, DD, "Acousto-optical characterization of the viscoelastic nature of a nuchal elastin tissue scaffold," *Tiss. Eng.*, 9, 645-656, 2003.

Duncan, DD and Kirkpatrick, SJ, "Performance analysis of a maximum-likelihood speckle motion estimator," *Opt. Express*, 10, 927-941, 2002.

Moffitt, TP, Baker, DA, Kirkpatrick, SJ, and Prahl, SA, "Mechanical properties of coagulated albumin and failure mechanisms of liver repaired using an argon beam coagulator with albumin," *J Biomed Mater Res*, 63, 722-8, 2002.

Kirkpatrick, SJ and Duncan, DD, "Processing techniques for laser speckle data derived from biological tissues," *J Biomed Optics*, 6, 418-426, 2001.

Kirkpatrick, SJ and Cipolla, MJ, "High resolution images laser speckle strain gauge for vascular applications," *J Biomed Optics*, 5, 62-71, 2000.

Jacques, SL and Kirkpatrick, SJ, "Acoustically modulated speckle imaging," *Opt Lett.*, 23, 879-881, 1998.

Kirkpatrick, SJ and Brooks, BW, "Micromechanical behavior of cortical bone as inferred from laser speckle data," *J Biomed Mater Res.*, 39, 373-379, 1998.

Duncan, DD, Kirkpatrick, SJ, Mark, FF, and Hunter, LW, "Measurements of strain rates in reinforcement fibers," *Meas. Sci. Technol.*, 6, 355-364, 1995.

Duncan, DD, Schneider, W, West, KJ, Kirkpatrick, S, and West, SK, "The development of personal dosimeters for use in the visible and ultraviolet wavelengths," *Photochem Photobiol.*, 62, 94-100,

1995.

Kirkpatrick, SJ and Duncan, DD, "Noncontact microstrain measurements in orthodontic wires," *J Biomed Mater Res.*, 29, 1437-1442, 1995.

Pennycuick, CJ, Fuller, MR, Oar, J, and Kirkpatrick, SJ, "Falcon versus grouse: Flight adaptations of a predator and its prey," *J. Avian Biol.*, 25, 39-49, 1994.

Kirkpatrick, SJ, "Scale effects on the stresses and safety factors in the wing bones of birds and bats," *J Exp Biol.*, 190, 195-215, 1994.

Duncan, DD, Kirkpatrick, SJ, Mark, FF, and Hunter, LW, "Transform method of processing for speckle strain rate measurements," *Appl. Optics*, 33, 5177-5186 1994.

Pennycuick, CJ, Heine, CE, Kirkpatrick, SJ, and Fuller, MR, "The profile drag of a hawk's wing, measured by wake sampling in a wind tunnel," *J Exp Biol.*, 165, 1-19, 1992.

Tokarz, RR and Kirkpatrick, SJ, "Copulation frequency and pattern of hemipenis use in males of the lizard *Anolis sagrei*," *Anim. Behav.*, 41, 1039-1044, 1991.

Tokarz, RR and Kirkpatrick, SJ, "Importance of intromission in maintaining the alternative pattern of male mounting behavior and hemipenis use in the lizard *Anolis sagrei*," *J Exp Zool.*, 259, 138-144, 1991.

Kirkpatrick, SJ, "The moment of inertia of bird wings," *J Exp Biol.*, 151, 489-494, 1990.

Full Length Proceedings Publications (varying levels of peer review):

Schaub, NJ, Kirkpatrick, SJ, and Gilbert, RJ, "Electrospun fiber alignment using the Radon transform," *Proc. SPIE* 7897, 78971D (2011); doi:10.1117/12.875019.

Wells-Gray, EM, Kirkpatrick, SJ, and Sakaguchi, RL, "Characterization of dental composite curing kinetics using dynamic light scatter," *Proc. SPIE* 7176, 717605, 2009.

Duncan, DD, Kirkpatrick, SJ, Gladish, JC, and Hurst, SA, "Laser speckle contrast imaging for the quantitative assessment of flow," *Proc. SPIE*, 7176, 717603, 2009.

Wells-Gray, EM, Kirkpatrick, SJ, Duncan, DD, and Sakaguchi, RL "Investigation of dental composite curing using sequential correlation methods," *Proc. SPIE, Saratov Fall Meeting 2008*.

Duncan, DD, Kirkpatrick, SJ, Gladish, JC, and Hurst, SA, "Laser speckle imaging for the quantitative assessment of flow velocity," *Proc. SPIE, Saratov Fall Meeting 2008*.

Duncan, DD and Kirkpatrick, SJ, "What is the proper model for laser speckle flowmetry?," *Proc. SPIE* 6855, 685502, 2008.

Duncan, DD and Kirkpatrick, SJ, "Spatio-temporal algorithms for processing laser speckle imaging data," *Proc. SPIE* 6858, 685802, 2008.

Duncan, DD and Kirkpatrick, SJ, "Algorithms for simulation of speckle (laser and otherwise)," *Proc. SPIE* 6855, 685505, 2008.

Kirkpatrick, SJ, Chang, I., and Duncan, DD, "Viscoelastic anisotropy in porcine skin: Acousto-optical and mechanical measurements," *Proc. SPIE* 5771, 174-183, 2005.

Duncan, DD and Kirkpatrick, SJ, "Gradient-based estimators for one-and two-dimensional speckle

motion," *Proc. SPIE* 5695, 128-135, 2005.

Kirkpatrick, SJ, Vigeland, L, and Duncan, DD, "Observations on the forward-scattered speckle patterns from healthy human fibroblasts and melanoma cells," *Proc. SPIE*, 5696, 71-79, 2005.

Kirkpatrick, SJ, Duncan, DD, and Fang, L, "Low-frequency surface wave propagation and the viscoelastic behavior of porcine skin, *Proc. SPIE* 5474, 127-137, 2004.

Kirkpatrick, SJ, Duncan, DD, and Fang, L, "Low-frequency surface wave propagation and the viscoelastic behavior of porcine skin, *Proc. SPIE* 5319, 274-284, 2004.

Kirkpatrick, SJ, "Optical Assessment of tissue mechanics: Acousto-optical elastography of skin," *Proc. SPIE* 5068, 74-84, 2003.

Chen, YC, Brazier, JJ, Kirkpatrick, SJ, and Prahl, SA, "Measurement of changes in concentrations of biological solutions using a Rayleigh interferometer," *Proc. SPIE* 5068, 273-283, 2003.

Kirkpatrick, SJ and Duncan, DD, "Acousto-optical assessment of skin viscoelasticity," *Proc. SPIE*, 4961, 209-220, 2003.

Duncan, DD and Kirkpatrick, SJ, "Maximum-likelihood estimators for one- and two-dimensional speckle motion," *Proc. SPIE*, 4961, 202-208, 2003.

Kirkpatrick, SJ and Patrickeyev, I, "Wavelet transform method of speckle image processing for the plane strain-rate measurements," *Proc. SPIE* 4707, 210-214, 2002.

Kirkpatrick, SJ, Duncan, DD, Baker, DA, and Adams, J, "surface mechanics of biological tissues using low-frequency Rayleigh waves detected by laser speckle," *Proc. SPIE* 4707, 127-133, 2002.

Hinds, MT, Kirkpatrick, SJ, and Duncan, DD, "Material properties of engineered tissues evaluated with nondestructive methods," *Proc. SPIE*, 4617, 275-283, 2002.

Janis, AD, Kirkpatrick, SJ, Gregory, KW, and Prahl, SA, "Effects of in-vitro target compression modulus on laser thrombolytic ablation rate," *Proc. SPIE*, 4609, 419-429, 2002.

Moffitt, TP, Baker, DA, Kirkpatrick, SJ, and Prahl, SA, "Mechanical properties of repaired liver using an argon beam coagulator with albumin," *Proc. SPIE* 4609, 178-185, 2002.

Patrickeyev, I and Kirkpatrick, SJ, "Tracking speckle motion with directional wavelets," *Proc. SPIE* 4257, 455-463, 2001.

Kirkpatrick, SJ and Duncan, DD, "Acousto-optical elastography," *Proc. SPIE* 4257, 426-432, 2001.

Kirkpatrick, SJ, "Optical elastography," *Proc. SPIE*, 4241, 58-68, 2001.

Duncan, DD and Kirkpatrick, SJ, "Processing techniques for laser speckle derived from biological tissues," *Proc. SPIE* 3914, 639-647, 2000.

Kirkpatrick, SJ and Duncan, DD, "Direct measurement of strain rates in biological tissues," *Proc. SPIE*, 3914, 630-638, 2000.

Kirkpatrick, SJ, "Optical assessment of tissue mechanical properties," *Proc. SPIE*, 4001, 92-101, 2000.

Kirkpatrick, SJ and Cippolla, MJ, "Laser speckle microstrain measurement in vascular tissue," *Proc. SPIE*, 3598, 121-129, 1999.

Kirkpatrick, SJ, "Transform method for laser speckle strain-rate measurements in biological tissues

and biomaterials," *Proc. SPIE,* 3726, 504-511, 1999.

Kirkpatrick, SJ and Jacques, SL, "Acoustically modulated speckle imaging of soft tissue," *ASME BED vol. 43, Advances in Bioengineering*, Wayne, J.S. (Ed.), American Society of Mechanical Engineers, N.Y. 1999.

Duncan, DD, Kirkpatrick, SJ, Mark, FF, and Hunter, LW, "Measurement of strain rates on reinforcement fibers," *Proceedings of the Society for Experimental Mechanics Spring Conference on Experimental Mechanics*, pp. 742-746, 1994.

Books:

Duncan, DD and Kirkpatrick, SJ, "*Speckle in Medicine and Biology*," Springer, New York (in press, expected publication date 2012).

Book Chapters:

Kirkpatrick, SJ and Duncan, DD, "Optical assessment of tissue mechanics," Chapter 19 in *Handbook of Optical Biomedical Diagnostics*, Tuchin, VV (ed.), SPIE Press, Bellingham, WA 2002.

Kirkpatrick, SJ and Duncan, DD, "Optical assessment of tissue mechanics," Chapter 19 in *Handbook of Optical Biomedical Diagnostics*, 2nd Edition, Tuchin, VV (ed.), SPIE Press, Bellingham, WA 2009 (in press).

Kirkpatrick, SJ, Duncan, DD, and Ramella-Roman, J, "Monitoring of blood flow and hemoglobin oxygenation," Chapter 12.1.3 in *Handbook of Biophotonics*, Popp, J, Tuchin, VV, Chiou, A, and Heinemann, S (eds.), Wiley-VCH, Berlin, 2011 (in press).

Kirkpatrick, SJ, "Laser speckle imaging," Chapter 21 in *Optical Techniques in Tissue Engineering*, Morgan, S and Matcher, S, (eds.), Taylor and Francis, London, 2011 (in press).

Books and Volumes Edited:

Optics in Tissue Engineering and Regenerative Medicine IV, Kirkpatrick, SJ and Wang, RK (eds.), SPIE Press, Bellingham, WA, 2010.

Coherent-Domain Methods for Biological Flows and Tissue Ultrastructure Monitoring, Briers, JD and Kirkpatrick, SJ (eds.) Part IV *in Handbook of Optical Biomedical Diagnostics*, 2nd Edition, Tuchin, VV (ed.), SPIE Press, Bellingham, WA 2009 (expected).

Optics in Tissue Engineering and Regenerative Medicine III, Kirkpatrick, SJ and Wang, RK (eds.), SPIE Press, Bellingham, WA, 2009.

Optics in Tissue Engineering and Regenerative Medicine II, Kirkpatrick, SJ and Wang, RK (eds.), SPIE Press, Bellingham, WA, 2008.

Optics in Tissue Engineering and Regenerative Medicine, Kirkpatrick, SJ and Wang, RK (eds.), SPIE Press, Bellingham, WA, 2007.

Laser-Tissue Interaction XIV, Jacques, SL, Duncan, DD, Kirkpatrick, SJ, and Kriete, A (eds.), SPIE Press, Bellingham, WA, 2003.

Laser Tissue Interaction XIII: Photochemical, Photothermal, and Photomechanical, Jacques, SL, Duncan, DD, Kirkpatrick, SJ, and Kriete, A (eds.), SPIE Press, Bellingham, WA, 2002.

Coherent-Domain Methods for Biological Flows and Tissue Ultrastructure Monitoring, Briers, JD and Kirkpatrick, SJ (eds.) Part IV *in Handbook of Optical Biomedical Diagnostics*, Tuchin, VV (ed.), SPIE Press, Bellingham, WA 2002.

Presentations at National and International Conferences (partial list):

Yang, C, Wu, CJ, Ostafin, A, Kirkpatrick, SJ, Minerick, A, "Dielectrophoretic response of perfluorocarbon oil-core chitosan poly-l-lysine, CaPO4 nanoparticles," American Electrophoresis Society Annual Meeting, October, 2011, Minneapolis, MN.

Kirkpatrick, SJ, and Duncan, DD, "Effects of combined ordered and unordered motion in laser speckle contrast imaging," Photonics West, SPIE, January 22-27, 2011, San Francisco, CA.

Kirkpatrick, SJ and Duncan, DD, "Effects of multiple decorrelation time constants in laser speckle contrast imaging," Photonics West, SPIE, January 22-27, 2011, San Francisco, CA.

Wells-Gray, E, Kirkpatrick, SJ, and Duncan, DD, "Applications of laser speckle contrast analysis for the study of dental resin composite polymerization kinetics," Photonics West, SPIE, January 22-27, 2011, San Francisco, CA.

Schaub, NJ, Kirkpatrick, SJ, and Gilbert, RJ, "Advanced methods of quantifying electrospun fiber alignment," Photonics West, SPIE, January 22-27, 2011, San Francisco, CA.

Kirkpatrick, SJ and Duncan, DD, "Recent progress on laser speckle contrast imaging simulation," Saratov Fall Meeting 2010, Saratov, Russia, October 5-8, 2010 (via Internet). (*Invited*)

Otsuka, Y, Kirkpatrick, SJ, Matusi, S, Komazawa, D, Kanegae, H, "Influence of occlusal force on mandibular bone surface," IADR General Session, July 14-17, 2010, Barcelona, Spain.

Wells-Gray, EM, Kirkpatrick, SJ, and Sakaguchi, RL, "Characterization of dental composite curing kinetics using dynamic light scatter," Photonics West, SPIE, January, 2009, San Jose, CA.

Duncan, DD, Kirkpatrick, SJ, Gladish, JC, and Hurst, SA, "Laser speckle contrast imaging for the quantitative assessment of flow," Photonics West, SPIE, January, 2009, San Jose, CA.

Wells-Gray, EM, Kirkpatrick, SJ, Duncan, DD, and Sakaguchi, RL "Investigation of dental composite curing using sequential correlation methods," Saratov Fall Meeting 2008, Saratov, Russia (via Internet). (*Invited*)

Duncan, DD, Kirkpatrick, SJ, Gladish, JC, and Hurst, SA, "Laser speckle imaging for the quantitative assessment of flow velocity," Saratov Fall Meeting 2008, Saratov, Russia (via Internet). (*Invited*)

Vartanian, KB, Kirkpatrick, SJ, Hanson, SR, Hinds, MT, "Elongated endothelial cells on micropatterned lanes have cytoskeletal alignment and distinct extracellular matrix deposition," International Vascular Biology Meeting, June 1-5, 2008, Sydney, Australia.

Duncan, DD and Kirkpatrick, SJ, "What is the proper model for laser speckle flowmetry?," BiOS 2008, Photonics West, SPIE, January 23-28, 2008, San Jose, CA.

Duncan, DD and Kirkpatrick, SJ, "Spatio-temporal algorithms for processing laser speckle imaging data," BiOS 2008, Photonics West, SPIE, January 23-28, 2008, San Jose, CA.

Duncan, DD and Kirkpatrick, SJ, "Algorithms for simulation of speckle (laser and otherwise)," BiOS 2008, Photonics West, SPIE, January 23-28, 2008, San Jose, CA.

Kirkpatrick, SJ, "Optical elastography – high resolution at a cost," 6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, November 2-5, 2007, Sante Fe, NM. (*Invited Tutorial Lecture*)

Kirkpatrick, SJ, "Speckle tracking-based elastography for skin monitoring," BiOS 2007, Photonics West, SPIE, January 20-25, 2007, San Jose, CA.

Kirkpatrick, SJ, "Optical elastography for bulk mechanical measurements of engineered tissues," BiOS 2007, Photonics West, SPIE, January 20-25, 2007, San Jose, CA.

Kirkpatrick, SJ, "Dependent and independent light scattering from PVA hydrogel phantoms," BiOS 2006, Photonics West, SPIE, January 21-26, 2006, San Jose, CA.

Vartanian, KB, Marzek, U, Tran, N, Kirkpatrick, SJ, Hanson, SR, and Hinds, MT, "Coagulation potential of circulating endothelial cells," 2005 Biomedical Engineering Society Annual Fall Meeting, September 28-October 1, 2005, Baltimore, MD.

Duncan, DD and Kirkpatrick, SJ, "Gradient–based estimators for one and two dimensional speckle motions," BiOS 2005, Photonics West, SPIE, January 23-28, 2005, San Jose, CA.

Kirkpatrick, SJ and Duncan, DD, "Observations of the forward-scattered speckle patterns from healthy human fibroblasts and melanoma cells," BiOS 2005, Photonics West, SPIE, January 23-28, 2005, San Jose, CA.

Kirkpatrick, SJ, Duncan, DD, Fang, Li, "Acousto-optical assessment of porcine skin viscoelasticity," BiOS 2004, Photonics West, SPIE, January 24-29, 2004, San Jose, CA.

Adams, J and Kirkpatrick, SJ, "Statistical behavior of transmitted laser speckle through porcine aortic endothelial cells," Oregon Academy of Science, February, 2004, Portland, OR.

Kirkpatrick, SJ, "Optical non-destructive evaluation: from biological tissues to engineered materials," Optical Society of America, Columbia Section Winter 2004 Meeting, March, 2004, Portland, OR. (*Invited*)

Kirkpatrick, SJ, "Laser speckle strain measurement in soft tissue," SEM X International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, 2004, Costa Mesa, CA.

Duncan, DD and Kirkpatrick, SJ, "Maximum likelihood estimators for one and two-dimensional speckle motion," Great Lakes Photonics Symposium, June 7-11, 2004, Cleveland, OH.

Kirkpatrick, SJ and Chang, I, "Laser speckle measurements for skin mechanics and diagnostics," 2004 American Society for Biomechanics Annual Meeting, September 8-11, 2004, Portland, OR.

Kirkpatrick, SJ, Chang, I, and Duncan, DD, "Viscoelastic anisotropy in porcine skin: acousto-optical and mechanical measurements," Saratov Fall Meeting, October, 2004, Saratov, Russia. (via Internet). (*Invited*)

Lagerquist, KA, Jensen-Segal, S, Kirkpatrick, SJ, Hinds, MT, and Gregory, KW, "Constitutive modeling of vascular constructs: a modified burst pressure method," 2004 American Society for Biomechanics Annual Meeting, September 8-11, 2004, Portland, OR.

Duncan, DD and Kirkpatrick, SJ, "Maximum-likelihood estimators for one and two-dimensional speckle motion," BiOS 2003, Photonics West, SPIE, January, 2003, San Jose, CA.

Kirkpatrick, SJ and Duncan, DD, "Acosuto-optical assessment of skin viscoelasticity," BiOS 2003, Photonics West, SPIE, January, 2003, San Jose, CA.

Kirkpatrick, SJ, "Optical methods for characterization of biomaterials," Saturday Night Hot Topics, BiOS 2003, Photonics West, SPIE, January, 2003, San Jose, CA. (*Invited*)

Adams, J, Menard, D, Kirkpatrick, SJ, and Sakaguchi, RL, "Investigating the mechanical behavior of a titanium dental implant using digital shearography," Oregon Academy of Sciences Annual Meeting, February 23, 2003, McMinville, OR.

Janis, AD, Breneman, KD, Hinds, MT, Lagerquist, KA, and Kirkpatrick, SJ, "The effect of chemical removal of nucleic acids on the mechanical properties of porcine small intestine submucosa (SIS)," Society for Biomaterials Annual Meeting, April, 2003, Reno, NV.

Kirkpatrick, SJ, Duncan, DD, Fang, Li, "Low frequency surface wave propagation and the viscoelastic behavior of porcine skin," Saratov Fall Meeting, October 7-10, 2003, Saratov, Russia (via Internet). (*Invited*)

Hinds, MT and Kirkpatrick, SJ, "Material properties of engineered tissues evaluated with nondestructive methods," BiOS 2002, Photonics West, SPIE, January, 2002, San Jose, CA.

Kirkpatrick, SJ, Hinds, MT, and Duncan, DD, "Laser speckle method for measurement of cell and cell sheet mechanics," BiOS 2002, Photonics West, SPIE, January, 2002, San Jose, CA.

Kirkpatrick, SJ, Baker, DA, and Duncan, DD, "Speckle tracking of low-frequency surface acoustic waves for mechanical characterization of tissues," BiOS 2002, Photonics West, SPIE, January, 2002, San Jose, CA.

Kirkpatrick, SJ, "Imaging the mechanical properties of biological tissues," OSA Biomedical Topical Meetings, April, 2002, Miami, FL. (*Invited*)

Kirkpatrick, SJ and Duncan, DD, "Processing algorithms for tracking laser speckle shifts in acousto-optical elastography of skin," 1st International Conference on the Ultrasound Measurement and Imaging of Tissue Elasticity, October, 2002, Niagara Falls, Canada.

Kirkpatrick, SJ "Optical assessment of tissue mechanics: Acousto-optical elastography of skin," SPIE-Saratov Fall Meeting, October, 2002, Saratov, Russia (via Internet). (*Invited*)

Chen, YC, Brazier, JJ, Kirkpatrick, SJ, and Prahl, SA, "Measurement of changes in concentrations of biological solutions using a Rayleigh interferometer," SPIE-Saratov Fall Meeting, October, 2002, Saratov, Russia (via Internet). (*Invited*)

Baker, DA and Kirkpatrick, SJ, "Characterization of surface mechanical properties of porcine skin," Oregon Academy of Science 2002 Meeting, Physics Section, February, 2002, Forest Grove, OR.

Kirkpatrick, SJ, Hinds, MT, and Adams, J, "Laser speckle method for evaluating the mechanical behavior of single cells and confluent cell sheets," Oregon Academy of Science 2002 Meeting, Physics Section, February, 2002, Forest Grove, OR.

Kirkpatrick, SJ and Duncan, DD, "Acousto-optic elastography," BiOS 2001, Photonics West, SPIE, January, 2001, San Jose, CA.

Patrickeyev, I, Kirkpatrick, SJ, and Duncan, DD, "Tracking speckle motion with directional wavelets," BiOS 2001, Photonics West, SPIE, January, 2001, San Jose, CA.

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Professional Memberships

SPIE – The Optical Engineering Society
International Biomedical Optics Society
Optical Society of America
Sigma Xi
American Institute for Medical and Biological Engineering
Biomedical Engineering Society

Professional and Character References:

Available upon request.