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EDUCATION

Doctorat Ingenieur (Ph.D.); Biomedical Engineering 1984
Paris Val-de-Marne University, Paris, France
Dissertation: Theoretical and Experimental Study of Light Propagation in Biological Tissues
Thesis Advisor: Professor Daniel Laurent

Diplome d'Etudes Approfondies (M.S.); Biomedical Engineering 1981
Paris Val-de-Marne University, Paris, France

Ingenieur Civil des Mines (B.S.); Chemical Engineering 1980
Ecole des Mines de Nancy, Nancy, France

CONTINUED EDUCATION

M.S. Education; Medical Education 1997
Faculty Development Program for Health Professions
University of Southern California, Los Angeles, California

POSITIONS AND APPOINTMENTS

Professor of Engineering Practice (Biomedical Engineering) 2015-present
Department of Biomedical Engineering
University of Southern California, Los Angeles, California

Director of Undergraduate Affairs 2014-present
Department of Biomedical Engineering
University of Southern California, Los Angeles, California

Director, M.S. Program in Medical Devices and Diagnostics Engineering 2006-present
Department of Biomedical Engineering
University of Southern California, Los Angeles, California

Associate Professor of Engineering Practice (Biomedical Engineering) 2007-2015
Department of Biomedical Engineering
University of Southern California, Los Angeles, California

Senior Lecturer Department of Biomedical Engineering University of Southern California, Los Angeles, California	2001-2007
Assistant Professor Department of Biomedical Engineering University of Southern California, Los Angeles, California	1993-2001
Research Assistant Professor Department of Biomedical Engineering University of Southern California, Los Angeles, California	1987-1992
Research Associate Department of Biomedical Engineering University of Southern California, Los Angeles, California	1984-1987
Research Assistant Department of Physiology Paris Val-de-Marne University, Creteil, France	1983-1984
Research Associate Department of Experimental Surgery Laval University, Quebec-City, Canada	1982-1983

TEACHING AND EDUCATIONAL PROGRAM DEVELOPMENT

Courses Taught

“Senior Projects: Measurement and Instrumentation – BME 405L” with laboratory (Senior capstone projects; capturing project requirements; project design; software implementation using LabVIEW, data acquisition and interfacing, data analysis, and user interface development). Taught every Fall and every Spring.	2001-present
“Medical Electronics – BME 302L” with laboratory (Analog electronics and devices; electronic functions; application to medical instrumentation). Taught every Spring.	1990-present
“Introduction to Biomedical Engineering – BME 101” with discussion (fundamentals of engineering science; conservation principles applied to mass, charge, and momentum, application to living systems and man-made biomedical instruments. Taught every Fall.	1993-2014
“Special Topics: “Engineering Medical Innovations – BME 453” - Co-instructor (Review of medical innovations proposals from USC clinicians – assessment of feasibility – project design).	Spring 2013
“Fundamentals of Craniofacial Biotechnology BME/DENT 412” – Course coordinator (genetic and developmental aspect of craniofacial development – tooth replacement and implants – craniofacial imaging).	Spring 2006
“Biomedical Computer Simulation Methods – BME 210” (numerical methods; computer applications to living systems modeling)	1993-1995 2004

“Physiological Systems – BME 403” (organ physiology; cardiovascular and renal systems)

1991-1992

Teaching Specialties and Competencies

- Development and implementation of active learning approaches, including flipped classroom and inquiry-based learning
- Pedagogic innovations to enhance student learning through engagement and preparation (“homework preview”, “exam vaccine”, “jeopardy review”)
- Creation and implementation of assessment instruments, rubrics, and audio visual learning material
- Development of laboratory experiments in electronics and instrumentation
- Teaching Competencies
 - Electronic circuits, electronic devices, biomedical instrumentation
 - Engineering design, prototyping, validation
 - LabVIEW programming
 - Introduction to engineering science
 - Conservation principles applied to Biomedical Engineering
 - Numerical mathematics and computing
 - Cardiovascular and respiratory physiology

Professional Involvement and Development (Selected list)

Board of Directors, American Society for Engineering Education, Pacific Southwest Division	2016 – Present
Faculty Fellow, Center for Excellence in Teaching, University of Southern California	2016 – Present
Abstract Reviewer, American Society of Engineering Education – Pacific Southwest Section	2015 – Present
Abstract Reviewer, American Society of Engineering Education – BioEngineering Division	2014 – Present
Abstract Reviewer, Biomedical Engineering Society Annual Meeting	2014 – Present
Session Co-Chair, American Society of Engineering Education – BioEngineering Division, 2015 Annual Meeting	June 2015
Session Co-Chair, Biomedical Engineering Society, 2014 Annual Meeting	October 2014
“Data Acquisition and Signal Conditioning” National Instruments 3-day professional training course, Irvine, CA	May 2006
“LabVIEW Advanced: Performance and Communication” National Instruments 3-day professional training course, Woodland Hills, CA	November 2003
“LabVIEW Instrument Control” National Instruments 2-day professional training course, Irvine, CA	June 2003
“Case Studies in Science” 5-day Workshop; SUNY Buffalo, Buffalo NY	May 2000

“Enhancing Student Success through a Model ‘Introduction to Engineering’ course”;
NSF-Chautauqua Short Course; California State University, Dominguez Hills, CA

March 1998

Publications/Presentations Related to Teaching

Maarek JM. “On-line learning practices of millennial students in the flipped classroom”. Accepted for publication. Proceedings American Society of Engineering Education, Pacific Southwest Division, Tempe, AZ. (Reviewed Proceedings paper).

Maarek JM. “Student feedback in inquiry-based laboratories for Medical Electronics course”. Accepted for publication. Proceedings American Society of Engineering Education, Columbus, OH. (Reviewed Proceedings paper).

Maarek JM. “Inquiry-based laboratories for Medical Electronics course”. BME Society Annual Meeting, Minneapolis, October 2016.

Maarek JM. “Inquiry-based laboratories for Medical Electronics course”. Proceedings American Society of Engineering Education, Pacific Southwest Division, Pomona, April 2016. (Reviewed Proceedings paper).

Maarek JM. “Student-friendly BME senior design project with assessment of ABET outcomes”. BME Society annual meeting, Tampa, October 2015.

Maarek JM, Kay B. “Assessment of performance and student feedback in the flipped classroom”. Proceedings American Society of Engineering Education, Seattle, June 2015. (Reviewed Proceedings paper; Best paper award – Bioengineering Division).

Maarek JM, Kay B. “Experimentation with flipped classroom paradigm in freshman level Biomedical Engineering course – comparison with advanced undergraduate course”. Proceedings American Society of Engineering Education, Pacific Southwest Division, San Diego, April 2015. (Reviewed Proceedings paper.)

Maarek JM, Ayiotis, A, Ragusa G. “Implementation and assessment of flipped classroom paradigm in Biomedical Engineering Course”. BME Society annual meeting, San Antonio, October 2014.

Maarek JM. “Flipping the Biomedical Engineering Classroom: Implementation and assessment in Medical Electronics Course”. Proceedings American Society of Engineering Education, Indianapolis, June 2014.

Maarek JM. “Implementation of flipped classroom model in Medical Electronics Course”. BME Society annual meeting, Seattle, September 2013.

Maarek JM. “Laboratory Design Projects based on OEM Medical Devices”. Third Biomedical Engineering Education Summit, Chicago, June 2008.

Maarek JM. “Biomedical design projects developed around OEM devices”. BME IDEA Fall Conference, September 2007.

Maarek JM. “Objective structured exam for biomedical electronics”. Proceedings American Society of Engineering Education Annual conference, June 2000.

Award Funding Related to Teaching and Instruction

USC Fund for Innovative Undergraduate Teaching. “Flipping the BME 302L Classroom”

2013-2014

Maarek JM

Equipment Grant, C.L. Powell Foundation. "Biomedical Engineering Instructional Laboratory Award"	2006-2007
Maarek JM	
Equipment Grant, C.L. Powell Foundation. "Funds for Biomedical Engineering Instructional Laboratory Equipment"	2005-2006
Maarek JM	
USC Undergraduate Research Support (Sharma Pooja, Francis Steven) "Brain Mapping of Spatial Navigation In The Barnes Maze In Freely-Moving Rats" Holschneider DP, Maarek JM	2005-2006
Provost Fund Award, University of Southern California "Virtual Laboratories for Biomedical Engineering" Maarek JM , Chauvet G, Berger T, Mel B, Nikias M.	1999-2000
Innovative Teaching Award, University of Southern California "Interactive Software Tool for Teaching Nerve Cell Physiology" Maarek JM , Asyali M.	1993-1994

Undergraduate Students Supervised (selected list)

Andrianna Ayiotis (Research Assistant). "Scoring of students actions in flipped classroom"	2013-2014
Robin Hartman (Research Volunteer). "Implantable minipump for use in mice"	2008-2009
Neil Sardesai (Directed Research/Research Volunteer). "Implantable minipump for use in mice"	2007-2008
Kimberly Mulder (Directed Research). "Development of microbolus infusion pump for use in mice: silicone reservoir and electrothermal valve characterization"	2006-2007
Joseph Tedeschi (Directed Research). "Printed circuit coil design for powering microbolus infusion pump"	2006
Steven Francis (Research volunteer and USC Undergraduate Research award). "Electrothermal valve design for microbolus infusion pump"	2005-2006
Pooja Sharma (Research volunteer and USC Undergraduate Research award). "Analysis of brain slice images for functional neuroimaging in rodents"	2005
Sarah Pniak (Directed Research). "Analysis of fluorescence dilution curves for determination of circulating blood volume"	2004

Graduate Students Supervised

Yu-Hao Peng, PhD candidate. Research topic: "Detection of ICG fluorescence in turbid medium with compensation for changes in blood perfusion"	2012 – present
Justin Abbott, MS BME: "interfacing fingerprinting sensor for measurement of sweat rate" BME 590	2015

Jung Yu, EE graduate student. BME 590 directed research + research volunteer: "Optical properties of turbid medium from reflected light intensity profiles"	2012 – 2013
Brittany Kay, BME doctoral student enrolled in BME 505L rotation. "Flattened Cortical Maps of Cerebral Function in the Rat: A Region-of-Interest Approach to Data Analysis and Display"	2007
Tina Givrad, PhD. "Induction Power Microbolus Pump used for Functional Neuroimaging Applications in Rodents".	2007
Thanassis Papaioanou, PhD. "On the Fluorescence Photobleaching of Native and Exogenous (BPD-MA) Fluorescence: Quantification of Kinetics and Diagnostic Value in Tumor and Atherosclerotic Animal Models"	2005
Matthew Sullivan, MS BME. "Determination of circulating blood volume with indocyanine green fluorescence dilution technique".	2005
Chitra Nadig, MS BME. "Real-Time EEG Analysis of Pediatric Patients Under General Anesthesia"	2004
Joshua Chu, MS BME. "System design of gated camera for fluorescence imaging"	2004
Juji Harimoto, PhD. "An implantable bolus infusion pump for the neurosciences"	2003
Mark E. Arnoldussen, PhD. "Modeling multispectral imaged backscatter of complex turbid tissues for improved retinal vessel oximetry"	2001
Laura Marcu, PhD. "Time-Resolved Laser-Induced Fluorescence Spectroscopy for Characterization and Clinical Classification of Atherosclerotic Lesions"	1998
Mark E. Arnoldussen, MS BME. "Comparing Signal Processing Methods for Spectral Bio-Imaging"	1997
Jay Huang, PhD. "Three-Dimensional Finite Element Analysis of the Human Auditory Brainstem Implant"	1997
Wendy J. Snyder, PhD. "An Ultraviolet Raman, Fluorescence and Time-Resolved Spectroscopic Investigation of Glucose and other Carbohydrates"	1996
Laura Marcu, MS BME. "Human Skeletal Muscle Oxygenation and Perfusion: Noninvasive Measurement by Near-Infrared Spectroscopy"	1995
Mark A. Sisson, MS BME. "Design of a Portable Infrared Spectrometer: Application to the Noninvasive Measurement of Glucose"	1994

Honors and Awards

Best Paper Award, American Society of Engineering Education annual conference, Bioengineering Division	2015
Northrop Grumman Excellence in Teaching Award, Viterbi School of Engineering, University of Southern California	2015
Outstanding Teaching Award, School of Engineering, University of Southern California	1997
Outstanding Teaching Award, School of Engineering, University of Southern California	1996

Outstanding Teaching Award, School of Engineering, University of Southern California 1994-1995

University Service Related to Teaching and Students

Department of Biomedical Engineering

Director of Undergraduate Affairs – Review and update of undergraduate curriculum – review of students’ requests for course substitutions - Supervision of curricular practical training (CPT) for graduate students 2014 - Present

Qualifying Exam/PhD Defense Committee - Committee member - PhD students in Biomedical Engineering. In 2016: Yu-Hao Peng (chair); Amber Dunning 1995 - Present

Undergraduate Affairs Committee – Review and upgrade of BME undergraduate program and curriculum – Preparation of accreditation of BME programs by Accreditation Board for Engineering and Technology (ABET) – Lead effort to review and upgrade undergraduate course content and curriculum. Lead effort to obtain re-accreditation of BME undergraduate programs by ABET. Full re-accreditation of BME programs granted in 2016. 1993-Present

Director, Masters Program in Medical Devices and Diagnostic Technology (MDDE) 2006-Present
Define and update curriculum for MDDE MS program. Review applicants files and decide about admission to MDDE program. Review student petitions for course substitutions.

BME Advisory Board – presentation of curriculum and teaching programs to members of BME Advisory Board. 2006-present

Letters of recommendation – Prepared letters of recommendation for BME students applying to graduate and professional schools, and to summer programs 1993-Present

Instructional laboratory. Management of software, hardware, and parts for BME instructional laboratory classroom (DRB 351). 2001-Present

Certified Labview Associate Developer Exam. Organized and supervised administration of exam for students enrolled in BME 405L to provide certification of proficiency in LabVIEW. 2015-Present
2011-2012

Mentoring of Brittany Kay, PhD new lecturer in Biomedical Engineering for implementation of flipped classroom approach in “Introduction to Biomedical Engineering – BME 101” course 2014 - 2015

Workshop Development – Collaboration with National Instruments Co. to develop workshops (02/2009 – 07/2010) for USC students on “Developing Scientific and Technical Applications with NI LabVIEW and PC-based Data Acquisition Devices”. 2008-2010

Fred S. Grodins Graduate Research Symposium – Award selection committee 2002-Present

Minor in Craniofacial Biotechnology – Interaction with faculty from the USC School of Dentistry for development of new Minor within the Biomedical Engineering undergraduate curriculum 2006-2007

Viterbi School of Engineering

Appointment and Tenure Committee; Executive Committee for Teaching Faculty – Review of promotion dossiers for faculty on teaching track	2016-present
Division of Engineering Education – Continuous Improvement Committee. Committee working on plan for better assessment of capstone design projects in 2015-2016. Streamlining ABET documentation procedures (2014-2015). Review of course evaluation procedures (2013-2014)	2012-present 2007-2008
Viterbi Senior Design Expo – Mentored teams of BME seniors who presented their design projects at Viterbi Senior Design Expo. One team recognized among top 3 at Undergraduate Engineering Awards reception in 2015. Four teams representing 17 students competed in 2012. BME teams won first prize and popular vote prize in 2011.	2011-present
ABET Committee/ABET Bootcamp – Assist in preparation of VSOE self-study – preparation of Biomedical Engineering self-study for ABET (Accreditation Board for Engineering and Technology) accreditation. Worked with Dean’s office and BME Department Chair to secure and maintain BME accreditation with ABET.	2002-present
Viterbi undergraduate graduation. BME department representative on faculty platform	2015
Faculty Marshall at Commencement ceremonies – Main University ceremony and Viterbi satellite ceremony.	2011-present
Trustee/Presidential Scholar Selection Committee – Interview of scholarship candidates – recommendation for scholarship awards	2014-present 1993-2009
Explore Engineering – Preview USC – Student Orientation – Presentation of Biomedical Engineering Department to prospective students and parents.	1995-Present
VSoE Curriculum Committee – Department representative – Review of curriculum proposals from VSOE departments – Advise faculty from BME Department preparing course proposals for Curriculum Committee.	1996-2014
Financial Aid Committee – Review of BME student applications for engineering financial aid.	2015-present 1994-2012
VSoE Masters Preview – Presentation of BME graduate programs to prospective graduate students	2007-2012
Faculty hire review and recommendation – reviewed file and prepared recommendation for lecturer in Information Technology Program	2015
Design Space Planning Committee – Department representative on committee to establish “maker space” at Viterbi School	2015-present
Undergraduate Engineering Academy – Presentation of current research to academy section of Hossein Hashemi	2007
Engineering Academic Center Instructional Laboratory Subcommittee	1998
Faculty-Student Liaison Committee	1995-1997

University of Southern California

Faculty Fellow, Center for Excellence in Teaching – Training and preparation workshop for new graduate teaching assistants. 2016-present

Prehealth Committee – Interview of premedical applicants – Evaluation of student dossiers - preparation of committee letters 1996-2000

B/MD Selection Committee – Interview and assessment of B/MD applicants 1996-2000

Engineering textbook reviews (selected list)

“Data Acquisition with LabVIEW” by R.H. King. McGraw-Hill Ed. 2007

Published 2009 ISBN 978-0-07-338584-6

“Engineering Systems” introductory engineering textbook by J. Brockman, University of Notre Dame, J. Wiley Ed. 2006

Introduction to Biomedical Equipment Technology” 4th Edition, by J.J. Carr and J.M. Brown, J. Wiley Ed. 1998

RESEARCH

Refereed Journal Articles

Maarek J-MI, Rubenstein EH, Guo Y, Lane, CJ, Campese VM, Holschneider DP. “Measurement of cardiac output and blood volume during hemodialysis with fluorescent dye dilution technique”. *Annals of Biomedical Engineering*. doi:10.1007/s10439-016-1711-6, 2016. PMID: 27539225.

Mittelstein D, Deng JH, Kohan R, Sadeghi M, **Maarek JM**, Zada G. “Novel Technique of multi-functional electrosurgery system for minimally-invasive surgery. *Journal of Neurosurgery*. April 29:1-6, 2016. PMID 27128589.

Peng YH, Heintz R, Wang Z, Guo Y, Myers K, Scremin OU, **Maarek, J-MI**, Holschneider DP. “Exercise training reinstates cortico-cortical sensorimotor functional connectivity following striatal lesioning: Development and application of a subregional-level analytic toolbox for perfusion autoradiographs of the rat brain” Accepted for publication, “*Frontiers in Physics – Interdisciplinary Physics*”, Dec 2, 2014. PMCID: PMC4347897.

Wang Z, Bradesi S, Charles J, Pang RD, **Maarek J-MI**, Mayer EA, Holschneider DP. “Functional brain activation during retrieval of visceral pain-conditioned passive avoidance in the rat”, *Pain*, 152(12):2746-56, 2011.

Sadler T, Nguyen P, Yang J, Givrad TK, Mayer EA, **Maarek JM**, Hinton DR, Holschneider DP, “Regional Cerebral Blood Flow Changes During Conditioned Fear In Adult Rats Exposed to Prenatal Stress”, *Brain Research*, 1385:163-74, 2011.

Givrad TK, **Maarek J-MI**, Moore WH, Holschneider DP, “Powering an Implantable Minipump with a Multi-layered Printed Circuit Coil for Drug Infusion Applications in Rodents”, *Annals of Biomedical Engineering*, 38: 707-713, 2010.

Li P-Y, Givrad TK, Sheybani R, Holschneider DP, **Maarek J-M**, Meng E, “A Low Power, On Demand Electrothermal Valve for Wireless Drug Delivery,” *Lab on a Chip*, 10:101-110, 2010.

- Wang Z, Guo Y, Bradesi S, Labus JS, **Maarek J-MI.**, Lee K, Winchester WJ, Mayer EA, Holschneider, DP, "Sex Differences In Functional Brain Activation During Noxious Visceral Stimulation In Rats", *Pain*, 145:120-128, 2009.
- Li P-Y, Givrad TK, Holschneider DP, **Maarek J-M**, Meng E, "A Parylene MEMS, Electrothermal Valve", *Journal of Microelectromechanical Systems*, 18(6):1184-97, 2009.
- Maarek J-MI**, Holschneider DP, "Estimation of Indocyanine Green Concentration in Blood from Fluorescence Emission: Application to Hemodynamic Assessment During Hemodialysis", *Journal of Biomedical Optics*, 14(5): 054006-1 to -12, 2009.
- Holschneider DP, Scremin OU, Chialvo DR, Kay BP, **Maarek J-MI** "Flattened Cortical Maps of Cerebral Function in the Rat: A Region-of-Interest Approach to Data Sampling, Analysis and Display", *Neuroscience Letters*, 434(2):179-184, 2008.
- Wang Z, Bradesi S, **Maarek J-MI**, Lee K, Winchester WJ, Mayer EA, Holschneider DP, "Regional Brain Activation in Conscious, Unrestrained Rats in Response to Noxious Visceral Stimulation", *Pain*, 138: 233-243, 2008. (Editorial V. Neugebauer, p. 5-8)
- Holschneider DP, **Maarek J-MI**, "Brain Maps on the Go: Functional Imaging During Motor Challenge in Animals", *Methods*, 45(4):255-61, 2008.
- Holschneider DP, Yang J, Sadler TR, Galifianakis NB, Bozorgzadeh MH, Bading JR, Conti PS, **Maarek J-MI**, "Changes in Regional Brain Perfusion During Functional Brain Activation: Comparison of [⁶⁴Cu]-PTSM with [¹⁴C]-Iodoantipyrine", *Brain Research*, 1234:32-43, 2008.
- Holschneider DP, Yang J, Guo Y, **Maarek J-MI**. Reorganization of Functional Brain Maps After Exercise Training: Importance of Cerebellar-Thalamic-Cortical Pathway, *Brain Research*, 1184C:96-107, 2007.
- Yang J, Sadler TR, Givrad TK, **Maarek J-MI**, Holschneider DP. Changes in Brain Functional Activation During Resting and Locomotor States After Unilateral Striatonigral Damage in Rats, *Neuroimage*, 36:755-773, 2007.
- Maarek JM**, Holschneider DP, Rubinstein EH. Fluorescence dilution technique for measurement of cardiac output and circulating blood volume in healthy human subjects. *Anesthesiology*, 106:491-498, 2007.
- Moore WH, Holschneider DP, Givrad TK, **Maarek JM**. Transcutaneous RF-Powered Implantable Minipump Driven by a Class-E Transmitter. *IEEE Transactions Biomed Eng*, 53: 1705-1708, 2006.
- Holschneider DP, Yang J, Sadler TR, Nguyen PT, Givrad TK, **Maarek J-MI**. Mapping Cerebral Blood Flow Changes During Auditory-Cued Conditioned Fear in the Nontethered, Nonrestrained Rat. *Neuroimage*, 29(4):1344-1358, 2006.
- Yang J, **Maarek JM**, Holschneider DP. In-vivo assessment of long-term catheter patency in-vivo in rats, *Laboratory Animals*, 39:259-268, 2005
- Maarek JM**, Holschneider DP, Pniak SN, Yang J, Rubinstein EH. Transcutaneous fluorescence dilution cardiac output and circulating blood volume during hemorrhagic hypovolemia. *Anesthesiology*, 102:774-782, 2005
- Nguyen PT, Holschneider DP, **Maarek JM**, Yang, J, Mandelkern MA Statistical Parametric Mapping Applied to an Autoradiographic Study of Cerebral Activation During Treadmill Walking in Rats, *Neuroimage*, 23:252-259, 2004.
- Holschneider DP, **Maarek JM**. Mapping Brain Function in Freely-Moving Subjects. *Neuroscience and Biobehavioral Reviews*. 28(5):449-461, 2004

- Maarek, JM**, Holschneider, DP, Harimoto J, Yang J Scremin OU, Rubinstein EH. Measurement of cardiac output with indocyanine green transcutaneous fluorescence dilution technique. *Anesthesiology*, 2004; 100:1476-83.
- Holschneider DP, **Maarek JM**, Yang J, Harimoto J, Scremin OU. Activation of cerebral cortex during acoustic challenge or acute foot-shock in freely moving, non-tethered rats. *Neurosci Letters*, 2004; 354: 74-78.
- Holschneider DP, **Maarek JM**, Yang J, Harimoto J, Scremin OU. Functional brain mapping in freely moving rats during treadmill walking. *J Cerebral Blood Flow & Metabolism* 2003;23:925-32.
- Holschneider DP, **Maarek JM**, Harimoto J, Yang J, Scremin OU. An implantable bolus infusion pump for use in freely-moving, non-tethered rats. *Am J Physiol, Heart Circ Physiol*, 2002; 283:H1713-H1719.
- Maarek, JM**, Holschneider DP, Harimoto, J. Fluorescence of indocyanine green in blood: intensity dependence on concentration and stabilization with sodium polyaspartate. *J Photochem Photobiol B: Biol*, 2001; 65 157-164.
- Marcu L, Fishbein MC, **Maarek JM**, Grundfest WS. Discrimination of human coronary artery atherosclerotic lipid-rich lesions by time-resolved laser-induced fluorescence. *Arterioscler Thromb Vasc Biol*, 2001; 21:1244-1250.
- Maarek JM**, Marcu L, Fishbein MC, Grundfest WS. Time-resolved fluorescence of human aortic wall: use for improved identification of aortic lesions. *Lasers Surg Med*, 2000; 27:241-254.
- Maarek JM**, Marcu L, Snyder WJ, Grundfest WS. Time-resolved fluorescence spectra of arterial fluorescent compounds: reconstruction with Laguerre expansion technique. *Photochem Photobiol*, 2000; 71: 178-187.
- Marcu L, Grundfest WS, **Maarek JM**. Photobleaching of arterial fluorescent compounds: characterization of elastin, collagen, and cholesterol time-resolved spectra during prolonged ultraviolet irradiation. *Photochem Photobiol*, 1999; 69: 713-721.
- Sardesai S, Durand M, McEvoy C, Johnson C, **Maarek JM**. Pulse oximetry in newborn infants with birth weight of 620 to 4285 grams receiving dopamine and dobutamine. *J Perinatol*, 1996; 16: 31-34.
- Howell S, **Maarek JM**, Fournier M, Sullivan K, Zhan WZ, Sieck G. Congestive heart failure: differential adaptation of the diaphragm and lattissimus dorsi. *J Appl Physiol*, 1995; 79: 389-397.
- Maarek, JM**, Grimbert F. Segmental pulmonary vascular resistances during oleic acid injury in rabbits. *Respir Physiol* 1994; 98: 179-191.
- Maarek JM**, Chang HK. Pulsatile pulmonary microvascular pressure measured with vascular occlusion techniques. *J Appl Physiol* 1991; 70: 998-1005.
- Maarek JM**, Chartrand DA, Ye TH, Chang HK. Pulmonary lobar vascular resistance during constant and pulsatile flows. *Respir Physiol* 1990; 82: 149-160.
- Chartrand DA, **Maarek JM**, Ye TH, Chang HK. Lung and chest wall mechanics in rabbits during high-frequency body-surface oscillation. *J Appl Physiol* 1990; 68: 1722-1726.
- Naeije R, **Maarek JM**, Chang HK. Pulmonary vascular impedance in microembolic pulmonary hypertension: effects of synchronous high-frequency jet ventilation. *Respir Physiol* 1990; 79: 205-218.
- Maarek JM**, Hakim TS, Chang HK. Analysis of pulmonary arterial pressure profile after occlusion of pulsatile blood flow. *J Appl Physiol* 1990; 68: 761-769.

Thiriet M, **Maarek JM**, Chartrand DA, Delpuech C, Davis L, Hatzfeld C, Chang HK. Transverse images of the human thoracic trachea during forced expiration. *J Appl Physiol* 1989; 67: 1032-1040.

Hakim TS, **Maarek JM**, Chang HK. Estimation of pulmonary capillary pressure in intact dog lungs using the arterial occlusion technique. *Am Rev Respir Dis* 1989; 140: 217-224.

Chartrand DA, Ye TH, **Maarek JM**, Chang HK. Measurement of pleural pressure at low and high frequencies in normal rabbits. *J Appl Physiol* 1987; 63: 1142-1146.

Maarek JM, Jarry G, Crowe J, Bui-Mong-Hung, Laurent D. Simulation of laser tomography in a heterogeneous biological medium. *Med & Biol Eng & Comput* 1986; 24: 407-414.

Jarry G, Munhoz JC, **Maarek JM**, Debray S, Laude JP, Bos F, Grillon G, Lemaire F, Bui-Mong-Hung. Etude par transillumination laser de tissus et d'organes de mammifères. *Innov Tech Biol Med* 1985; 6: 567-575.

Maarek JM, Guidoin R, Aubin M, Prud'homme RE. Molecular weight characterization of virgin and explanted polyester arterial prostheses. *J Biomed Mat Res* 1984; 18: 881-894.

Bui-Mong-Hung, Jarry G, **Maarek JM**, Laurent D. Overall myocardial energetics in physiological conditions and in acute volume overloading. *Eur Heart J* 1984; 5 Suppl F: 27-36.

Ghesquiére S, Debray S, **Maarek JM**, Fraysse F, Besson B, Bui-Mong-Hung, Jarry G. L'image par transillumination collimatée de tissus et d'organes de mammifères. *Innov Tech Biol Med* 1984; 5: 22-32.

Maarek JM, Jarry G, De Cosnac B, Lansiaart A, Bui-Mong-Hung. A simulation method for the study of laser transillumination of biological tissues. *Ann Biomed Eng* 1984; 12: 281-304.

Jarry G, Ghesquiére S, **Maarek JM**, Fraysse F, Debray S, Bui-Mong-Hung, Laurent D. Imaging mammalian tissues and organs using laser collimated transillumination. *J Biomed Eng* 1984; 6: 70-74.

Jarry G, Bui-Mong-Hung, **Maarek JM**, Brault Y, Lautier A, Laurent D. A hybrid device for measurement of left ventricular heat production. *J Biomed Eng* 1982; 4: 227-232.

Patents

US Patent #8,002,298 (2013) "System For Repetitive Measurement Of Cardiac Output In A Freely Moving Body", Inventors: Blanco C, Richmond FR, Holschneider DP, Maarek J-MI

US Patent #8,249,697 (2012) "Cardiac Output Monitor with Compensation For Tissue Perfusion", Inventors: Rubenstein EH, Holschneider DP, **Maarek J-MI**, Eskovitz A

US Patent #8,082,016 (2011) "Measurement of cardiac output and blood volume by non-invasive detection of indicator dilution", Inventors: Rubenstein EH, Holschneider DP, Maarek J-MI

US Patent #7,611,470 (2010) "Method and Apparatus for Measurement of Cardiac Output and Blood Volume by Noninvasive Detection of Indicator Dilution", Inventors: Rubenstein EH, Scremin OU, Holschneider DP, Maarek J-MI

US Patent #7,590,437 (2009), "Method and Apparatus for Measurement of Cardiac Output and Blood Volume by Noninvasive Detection of Indicator Dilution", Inventors: Rubenstein EH, Scremin OU, Holschneider DP, Maarek J-MI

US Patent #7,474,906 (2009) "Method for Dye Injection for the Transcutaneous Measurement of Cardiac Output. Inventors" **J-M Maarek**, DP Holschneider, EH Rubinstein.

US Patent # 6,757,554 (2004) "Method and apparatus for measurement of cardiac output by transcutaneous detection of fluorescent indicator". Rubinstein EH, Scremin OU, Holschneider DP, **Maarek JM**.

US Patent # 6,272,376 (2001). "Time-resolved, laser induced fluorescence for the characterization of organic material". Marcu L, Grundfest WS, **Maarek JM**.

US Patent #5,701,902 (1997). "Spectroscopic burn injury evaluation apparatus and method". Vari SG, **Maarek JM**.

Research Awards and Fellowships

Ongoing Research Support:

Cystic Fibrosis Research Inc. "Sweat Rate Measurement for Confirmation of Cystic Fibrosis Newborn Screening" 9/1/15-8/31/17
Role: Co-investigator; PI: Daniel Salinas, MD. CHLA

Completed Research Grants:

National Institute of Child Health & Human Development (NICHD), 1R01HD060630 7/15/10-7/14/16
"Functional Adaptation of Neural Circuits After Exercise and Basal Ganglia Injury"
Role: Co-investigator; PI: Holschneider.

National Institutes of Health (HLBI), 1R01HL103765-01 7/01/10-6/30/16
"Monitoring of Cardiovascular Function in Infants By Transcutaneous Dye Dilution"
Multiple PIs: **Maarek JM**, Holschneider DP, Seri I.

NIDA, 1R21DA026970-01 2007-2009
"Implantable Minipump For Tetherless Drug Self-Administration In Mice"
Role: Co-investigator; PI: Holschneider

National Alliance for Research on Schizophrenia and Depression 2007-2009
"Mapping Functional Brain Activation in Mice Lacking the Serotonin Transporter: Effects of Stress Sensitization in the Development of Mood Disorders."
Role: Co-investigator; PI: Holschneider

Research Grant, Alfred E. Mann Institute for Biomedical Engineering at USC 2001-2009
"Minimally Invasive Measurement of Cardiac Output using Indocyanine Green Fluorescence"
Maarek JM, Holschneider DP, Scremin OU, Rubinstein EH

Research grant (R01) National Institute of Biomedical Imaging and Bioengineering 2005-2008
"Microinfusion Pump For Animal Functional Brain Mapping"
Holschneider DP, **Maarek JM**, Scremin OU.

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Holschneider DP, **Maarek JM**, Scremin, OU

Research Grant. The Whitaker Foundation “Functional Neuroimaging of Aggressive Behaviors Using an Implantable Microbolus Infusion Pump” Holschneider DP, Maarek JM	2004-2005
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Assistant Professor Grant, C. L. Powell Foundation – University of Southern California Maarek JM.	1997-1999
Grant-in-aid, American Heart Association-Greater Los Angeles Affiliate “Excimer Laser-Induced Time Resolved Fluorescence: Detection of Atherosclerosis” Maarek JM , Grundfest WS.	1995-1997
Faculty Research and Innovation Fund Award, University of Southern California “Near Infrared Monitoring of Tissue Perfusion and Oxygen Delivery” Maarek JM.	1991-1993
Grant-in-aid, American Heart Association-Greater Los Angeles Affiliate “Use of Skeletal Muscle for Cardiac Assist in Congestive Heart Failure” Howell S, Maarek JM.	1991-1992
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Peng YH, **Maarek JM**. "Noninvasive Detection System for Estimating Cutaneous Blood Perfusion Level", BME Society Annual Meeting, Tampa, 10/08 – 10/10/2015

Peng YH, **Maarek JM**. "Optical Skin Perfusion Monitor for Correction of Circulating Indocyanine Green Concentration Measured with a Skin Probe", BME Society Annual Meeting, San Antonio, 10/22 – 10/25/2014

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