
BIOGRAPHICAL SKETCH

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NAME OF SPONSOR (CO-SPONSOR) Irving J Bigio, Ph.D.	POSITION TITLE Professor, Boston University Departments of Biomedical Eng., Electrical & Computer Eng., Physics, Gastroenterology
eRA COMMONS USER NAME ijbigio	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
The University of Michigan	B.S.	1969	Physics
The University of Michigan	M.S.	1970	Physics
The University of Michigan	Ph.D.	1974	Physics

Positions:

1970 - 1974	Doctoral Candidate, The University of Michigan
1974 - 1984	Scientific Staff Member (Advanced Laser Concepts Group), Los Alamos National Lab.
1976 - 1977	Fulbright Scholar, the Weizmann Institute of Science, Rehovot, Israel (while on leave)
1984 - 1988	Deputy Group Leader, Laser Science and Applications Group, Los Alamos Natl. Lab.
1985, 1987 and 1989 (Summers):	Visiting Professor, H.C. Ørsted Institute, University of Copenhagen, DK
1988 - 1994	Group Leader, Laser Science and Applications Group (~60 members), and ('91-'94) Program Manager, ICF Laser Science Program, Los Alamos National Laboratory.
1994 - 1995	Guest Fellow, Oxford University (Pembroke College), England (while on sabbatical leave)
1995 - 2001	Senior Scientist, Bioscience Division, Los Alamos National Laboratory.
2001 - present	Professor, Boston University, Depts. of Biomedical Eng., Elect. & Computer Eng., Physics
2008	Professor, BU School of Medicine, Department of Medicine (Gastroenterology)

Honors (recent selected):

Guest Professor (Honorary), University College London, Dept. of Surgery (Dec. 2007 - present)
Invited Nominator for the 2007 Nobel Prize in Physics
Plenary speaker: Int'l. Symposium on Modeling and Control in Biomedical Systems, Reims, France 2006.
Distinguished Speaker: Ministry of Science and Technology, Kingdom of Thailand, June 2003.
Elected to College of Fellows, American Institute for Medical & Biological Engineering, March 2002.
Distinguished Speaker: Annual Meeting of the Royal College of Surgeons, Edinburgh, March, 2000.
Presidential Traveling Lecturer - Optical Society of America, 1998-2008
Elected Fellow: Optical Society of America, 1997
Inventor Award, Los Alamos, 1996: for patent on laser method for fusing bone.
Federal Laboratory Consortium Award for Excellence in Technology Transfer, 1996.
Los Alamos Award, 1996: for scientific achievement.
Dozor Fellowship Award 1995: Ben Gurion Univ. (Israel), visiting scholar, lectures on biomedical optics.
Guest Fellow, the University of Oxford. 1994: Pembroke College, & Dept. of Engineering Science.
Inventor Award, Los Alamos, 1994: for the Optical Biopsy System and related patents.
R&D-100 Award, 1990, 1994, 1995: three awards for development of different technologies for minimally-invasive diagnostics and therapeutics.

Advisory committees, editorial boards, conference chairs (recent selected):

Study Section Charter Member: NIH: BMIT Study Section, and various special review panels. (current)
Advisory Committee, NCI/AdMeTech "Brain Trust" on novel technologies for prostate cancer. (current)
Steering Comm. co-Chair, NIH/NCI Network for Translational Research in Optical Imaging (current)
External Advisory Comm, NCI Program on optical diagnosis of cervical cancer, MD Anderson: (1999-2007).
External Review Committee, University of Michigan, Department of Biomedical Engineering (2005)
Advisory Panel on Future Technologies for Medical Imaging, NIH Director's Office (2005)
External Advisory Committee, Tufts University, Department of Biomedical Engineering (2004)
Board of Directors, Photonics Research Ontario, agency of the Ontario Provincial Government: (2001-2004)
Scientific Advisory Board, Advanced Research Technologies, Ltd., Montreal: (current)
Organizer/Member, Advisory Council on Optical Technologies, Office of Women's Health, DHHS (1997-99)

Advisory Panel on Functional Imaging (Optical Technologies), Office of Women's Health & NCI. (1998)
Editorial Boards: Journal of Biomedical Optics; Lasers in the Life Sciences; J. Medical Devices - (current)
General co-Chair, European Conferences on Biomedical Optics, Munich (June 2001, June 2003).
Co-chair, Conference on Optical Biopsy, Stockholm, Sweden (Sept. 1998)
Co-chair, Intl. Conf. on Optical Biopsy, Sanremo, Italy (Sept. 1997).
Co-chair, Eng. Found. Conf. Advances in Optical Technologies for Medicine and Surgery, (July, 1997).
Program comm. for various international conferences on biophotonics for OSA, IEEE, SPIE and others.

B. Selected recent peer-reviewed publications

"Elastic scattering spectroscopy as a diagnostic tool for differentiating pathologies in the gastrointestinal tract: preliminary testing", Irving J. Bigio, Judith R. Mourant, James Boyer, Tamara M. Johnson and JoAnne Lacey, J. Biomedical Optics **1**, pp.192-199 (1996).

Invited review: "Ultraviolet and visible spectroscopies for tissue diagnostics: fluorescence spectroscopy and elastic-scattering spectroscopy," Irving J. Bigio and Judith R. Mourant, Phys. in Medicine and Biology **42**, 803-814 (1997).

"Influence of particle size and concentration on the diffuse backscattering of polarized light from tissue phantoms and biological cell suspensions," A.H. Hielscher, J.R. Mourant and I.J. Bigio, Applied Optics **36**, pp. 125-135 (1997).

"Measuring absorbance in small volumes of highly scattering media: geometries for which pathlengths do not depend on scattering properties", J.R. Mourant D.A. Jack, T.M. Johnson, H.D. Miller and I.J. Bigio, Applied Optics **36**, pp. (1997).

"Noninvasive measurement of chemotherapy drug concentrations in tissue: preliminary demonstrations of in vivo measurements," Judith R. Mourant, Tamara M. Johnson, Gerrit Los and Irving J Bigio, J. Physics in Medicine and Biology **44**, pp. 1397-1417 (1999)

"Diagnosis of breast cancer using elastic-scattering spectroscopy: preliminary clinical results," I.J. Bigio, S.G. Bown, G. Briggs, S. Lakhani, D. Pickard, P.M. Ripley I.G. Rose and C. Saunders, J. Biomedical Optics **5**, 221-228 (2000).

"A novel optical biopsy technique using elastic scattering spectroscopy for dysplasia and cancer in Barrett's esophagus," L.B. Lovat, D. Pickard, M. Novelli, P.M. Ripley, H. Francis, I.J. Bigio, S.G. Bown, Gastrointestinal Endoscopy **51**, pp. 4919-4921 (2000).

"Elastic scattering spectroscopy for intraoperative determination of sentinel lymph node status in the breast," KS Johnson, DW Chicken, DCO Pickard, AC Lee, G Briggs, M Falzon, IJ Bigio, MR Keshtgar and SG Bown, J. Biomedical Optics **9**(6), pp. 1320-1326 (2004).

Invited review: "Spectroscopic Sensing of Cancer and Cancer Chemotherapy, current status of translational research" Irving J Bigio and Stephen G. Bown, Cancer Biology and Therapy **3**, no.3, 259-267 (2004).

"Elastic scattering spectroscopy for the diagnosis of colonic lesions: initial results of a novel optical biopsy technique," Anjan Dhar, Kristie S. Johnson, Marco R. Novelli, Stephen G. Bown, Irving J. Bigio, Laurence B. Lovat, Stuart L. Bloom, Gastrointestinal Endoscopy **63** (2): 258-62, 2006.

"Elastic scattering spectroscopy accurately detects high grade dysplasia and cancer in Barrett's esophagus," LB Lovat, K Johnson, GD Mackenzie, BR Clark, MR Novelli, S Davies, M O'Donovan, C Selvasekar, SM Thorpe, D Pickard, R Fitzgerald, T Fearn, IJ Bigio, SG Bown, GUT **55**, 1078-1083 (May, 2006)

"Optical method for real-time monitoring of drug concentrations facilitates the development of novel methods for drug delivery to brain tissue," Roberto Reif, Mei Wang, Shailendra Joshi, Ousama Aamar and Irving J Bigio, J Biomedical Optics, 12(3), 034036 (May/June 2007)

Invited Editorial: "Gastrointestinal Cancer Surveillance by Optical Sensing: Commentary on Liu et al." IJ Bigio and SK Singh, Clinical Cancer Research **13**(15), 4316 (Aug. 1, 2007)

"An analytical model of light reflectance for extraction of the optical properties in small volumes of turbid media," Roberto Reif, Ousama A' Amar and Irving J. Bigio, Applied Optics **46**, 7317-7328 (Oct. 2007)

"Elastic scattering spectroscopy as a diagnostic tool for apoptosis in cell cultures," C.S. Mulvey, A.L. Curtis, S.K. Singh and I.J. Bigio, Invited paper: IEEE J. Select. Topics in Quant. Electron. **13**, 1663-1670 (Oct. 2007).

"Analysis of changes in reflectance measurements on biological tissues subjected to different probe pressures," R. Reif, M.S. Amoroso, K.W. Calabro, O. Aamar, S.K. Singh and I.J. Bigio, J. Biomed. Opt. Letters **13**, 010502-1 – 3, (Jan./Feb. 2008)

"Design of a system to measure light scattering from individual cells excited by an acoustic wave," R. Georgescu, D. Khismatulin, R.G. Holt, J.L. Castagner and I.J. Bigio, Optics Express **16**, 3496-3503 (2008)