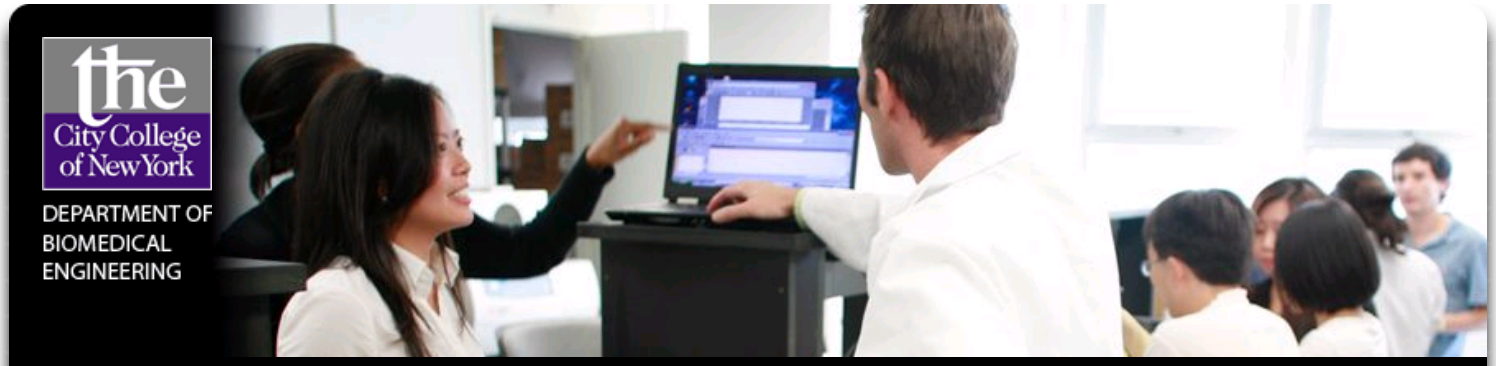

Marom Bikson
Associate Professor of
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Marom Bikson

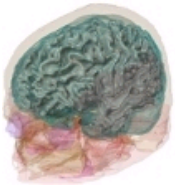
Education

Post-Doc, Neurophysiology Unit, University of Birmingham Medical School, U.K., 2003
Ph.D., Biomedical Engineering, Case Western Reserve University Cleveland, OH, 2000
B.S., Biomedical Engineering (EE Concentration), Johns Hopkins University, Baltimore, MD, 1995

Research Areas and Expertise

Prof. Marom Bikson担 research group studies the effects of electricity on the human body and applies this knowledge toward the development of medical devices and electrical safety guidelines.

"Our goal is to improve human health by combining engineering innovation, with cutting-edge experimental techniques, and original bio-medical insight. This challenge requires creative problem-solving, precision, and imagination. We are tremendously fortunate to access the extensive resources of the City University of New York research centers and of the New York Center for Biomedical Engineering hospital network"



Specific areas of research include:

1) Medical devices including biosensors, drug delivery technology, and electrotherapy devices for neurological disorders.

2) Medical device safety including electrical hazards, electroporation, heating damage, and safe stimulation protocols.

3) Electrical safety, electric shock hazards, and accidental electrocution.

4) Understanding the neuronal networks underlying normal brain function, including the role of endogenous electric fields.

5) Developing new treatments for neurological diseases including epilepsy and depression, through translational research.

Prof. Bikson扭 group uses a range of research and engineering design tools including cellular and animal studies, computer simulations, imaging, and clinical evaluation. Prof. Bikson扭 research has recieved support from funding agencies including NIH (NINDS,NCI,NIGMS), The Andy Grove Foundation, The Wallace H. Coulter Foundation, and the Howard Hughes Medical Institute. Prof. Bikson is actively involved in biomedical education including outreach to underserved groups.

Prof. Bikson has provided technical support and consulting for biomedical companies (Medtronic, Boston Scientific, Nevrocorp, Ion Channel Innovations, Wyle), utility companies (Con Edison, First Energy), regulatory agencies (NASA, NY State Public Service Commission, Potomac Institute for Policy Studies), and litigation support.

View Prof. Bikson's CV PDF

Prof. Bikson is co-director of Neural Engineering at The City College of New York and the New York Center for Biomedical Engineering. More project information at **CCNY Neural Engineering**

Selected Publications

Radman T, Ramos RL, Brumberg JC, Bikson M. Role of cortical cell type and morphology in sub- and suprathreshold uniform electric field stimulation. *Brain Stimulation*. 2009; 2(4):215-228. PDF

Datta A, Bansal V, Diaz J, Patel J, Reato D, Bikson M. Gyri 朽recise head model of transcranial DC stimulation: Improved spatial focality using a ring electrode versus conventional rectangular pad. *Brain Stimulation*. 2009; 2(4):201-207. PDF

Bikson M, Datta A, Elwassif M. Establishing safety limits for transcranial direct current stimulation. *Clinical Neurophysiology.* 2009; 120:1033-1034. PDF

Bikson M, Bulow P, Stiller JW, Datta A, Battaglia F, Karnup SV, Postolache TT. Transcranial direct current stimulation for major depression: a general system for quantifying transcranial electrotherapy dosage. *Current Treatment Options in Neurology.* 2008; 10:377-85. PDF

Datta A, Elwassif M, Battaglia F, Bikson M. Transcranial current stimulation focality using disc and ring electrode configurations: FEM analysis. *Journal of Neural Engineering*. 2008; 5:163-174. PDF

An JH, Radman T, Su Y, Bikson M. Effects of glucose and glutamine concentration in the formulation of the artificial cerebrospinal fluid (ACSF). *Brain Research*. 2008; 1218:1586-93 PDF

Su Y, Radman T, Vaynshteyn J, Parra LC, Bikson M. Effects of high-frequency stimulation on epileptiform activity in vitro: ON/OFF control paradigm. *Epilepsia*. 2008; 49:1586-93 PDF

Radman T, Su Y, An JH, Parra L, Bikson M. Spike timing amplifies the effect of electric fields on neurons: Implications for endogenous field effects *Journal of Neuroscience*. 2007; 27:3030-3036. PDF

Fox JE, Bikson M, Jefferys JG. The effect of neuronal population size on the development of epileptiform discharges in the low calcium model of epilepsy. *Neuroscience Letters*. 2007; 411:158-61.

Elwassif MM, Kong Q, Vazquez M, Bikson M. Bio-heat transfer model of deep brain stimulation-induced temperature changes. *Journal of Neural Engineering*. 2006; 3:306-15. PDF

Merrill D, Bikson M, Jefferys JGR. Electrical stimulation of excitable tissue: design of efficacious and safe protocols. *Journal of Neuroscience Methods*. 2005; 141: 171-198 PDF

Fox JE, Bikson M, Jefferys JGR. Tissue resistance changes and the profile of synchronized neuronal activity during ictal events in the low calcium model of epilepsy. *Journal of Neurophysiology*. 2004; 92: 181-188 PDF

Bikson M, Inoue M, Akiyama H, Deans JK, Fox JE, Miyakawa H, Jefferys JGR. Effects of uniform extracellular DC electric fields on excitability in rat hippocampal slices in vitro. *Journal of Physiology*. 2004; 557: 175-190 PDF

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Jefferys JGR, Deans J, Bikson M, Fox J. Effects of weak electric fields on the activity of neurons and neuronal network. *Radiation Protection Dosimetry*. 2003; 106:321-323

Shuai J, Bikson M, Lian J, Hahn PJ, Durand DM. Ionic mechanisms underlying spontaneous CA1 neuronal firing in Ca2+-Free Solution. *Biophysical Journal* 2003; 84: 2099-111

Lian J, Bikson M, Sciortino C, Stacey WC, Durand DM. Local suppression of epileptiform activity by AC Fields. *Journal of Physiology*. 2003; 547: 427-434

Bikson M, Fox JE, Jefferys JGR. Neuronal aggregate formation underlies spatio-temporal dynamics of non-synaptic seizure initiation. *Journal of Neurophysiology*. 2003; 89: 2330-2331 PDF

Bikson M, Id Bihi R, Vreugdenhil M, Kohling R, Fox JE, Jefferys JGR. Quinine suppresses extracellular potassium transients and ictal epileptiform activity without decreasing neuronal excitability in vitro. *Neuroscience* 2002; 115: 253-263

Lian J, Bikson M, Shuai J, Durand DM. Propagation of non-synaptic epileptiform activity across lesion in rat hippocampal slices. *Journal of Physiology* 2001; 537; 191-199

Bikson M, Baraban SC, Durand DM. Conditions sufficient for non-synaptic epileptogenesis in the CA1 region of rat hippocampal slices. *Journal of Neurophysiology* 2001; 87:62-71 PDF

Bikson M, Lian J, Hahn PJ, Stacey WC, Sciortino C, Durand DM. Suppression of epileptiform activity by high frequency sinusoidal fields in rat hippocampal slices. *Journal of Physiology* 2001; 531:181-191 PDF

Durand DM, Bikson M. Suppression and control of epileptiform activity by electrical stimulation: a review. *Proceedings of the IEEE* 2001; 89:1065-1082 PDF

Ghai R, Bikson M, Durand DM. Effects of applied electric fields on low calcium epileptiform activity in the CA1 region of rat hippocampal slices. *Journal of Neurophysiology* 2000; 84:274-280 PDF

Bikson M, Ghai R, Baraban SC, Durand DM. Modulation of burst frequency, duration, and amplitude in the zero-Ca+2 model of epileptiform activity. *Journal of Neurophysiology* 1999; 82:2262-70 PDF

Selected Professional Activities

2009 Wallace H. Coulter Early Career Award "High-Density Transcanial Electrtrical Stimulation"

2009 International Workshop on Seizure Prediction "Modulation Seizure Permissive States With Weak Electric Fields" slides

2009 Design of Medical Devices Conference "High-Density Transcranial Electrical Stimulation" slides

2008 Neural Interface Conference "Rational Design of Sub-threshold Stimulation Protocols" view the talk (link, register, and link again)

Opening Lecture 2008 Third International Conference on Transcranial Magnetic and Direct Current Stimulation "From TMS to tDCS to Modulated therapies: Biophysics of electrical therapy design" slides

Experts report for Jersey Central Power & Light Company, subsidiary of FirstEnergy Corporation 2005-2007 "A review of health hazards associated with exposure to ultra low voltages"

Moderator Health Effects Group Potomac Institute for Policy Studies, 2005 Conference on Stun Devices

Consultant for Consolidated Edison of New York 2004 "A review of hazards associated with exposure to low voltage " submitted to the New York State Public Service Commission

The City College of New York/City University of New York Medical School Institutional Animal Care and Use Committee (2004-)

Co-director, Howard Hughes Medical Institute Program for Undergraduates at CCNY (2005-2009)

Teaching

Undergraduate

Biomedical Engineering Senior Design 1 (BME 405)
Experimental Methods in Biomedical Engineering (BME 310)
Biomedical Transducers and Instrumentaiton (BME 405)
Introduction to Biomedical Enginering (BME 101)

Graduate

Neural Engineering