

# Matthew Anthony Schiefer, Ph.D.

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## OBJECTIVE

Seeking a professional position in engineering/research that will utilize my skills in modeling, clinical research, organization, and management with preference of a position associated with neuromodulation.

## EDUCATION

- 08/01-05/09     **Case Western Reserve University**     *Cleveland, OH*  
Ph.D., Biomedical Engineering (May 2009)  
M.S., Biomedical Engineering (May 2003)  
GPA: 3.83
- 08/96-05/01     **Vanderbilt University**     *Nashville, TN*  
Engineer In Training (EIT) Certification  
B.E., Biomedical Engineering  
*Magna Cum Laude*, GPA: 3.65
- 02/99-11/99     **Murdoch University**     *Perth, Western Australia*  
Study Abroad Program  
GPA: 4.0

## RESEARCH AND PROFESSIONAL EXPERIENCE

- 05/09-Present     **Post-Doctoral Scholar – Case Western Reserve University**     *Cleveland, OH*  
Mentor: Dr. Ronald Triolo

*Research* – Design & analysis of a sciatic nerve neuroprosthesis

- Modeling Neural Response to Electrical Stimulation
  - 3D Finite Element Method (FEM) model development (Matlab, Ansoft Maxwell)
  - Neural simulations (Matlab, Neuron)
  - Biomechanical Modeling (OpenSIMM)
- Intraoperative EMG acquisition and analysis during neural stimulation
  - EMG acquisition, analysis, and graphical user interface (GUI) development (Matlab)
  - Stimulator control (xPC Target, Simulink)

- 12/03-05/09     **Graduate Research Assistant – Case Western Reserve University**     *Cleveland, OH*  
Mentor: Dr. Dustin Tyler

*Dissertation Research* – “Optimized design of neural interfaces for clinical neuroprostheses: anatomically-based modeling and intraoperative evaluation”

- 3D FEM model development (AutoCAD, Ansoft Maxwell)
- Neural stimulation computer simulations and analysis (Matlab, Neuron, Excel, S+)
- Distributed quasi-parallel computing (Ohio Supercomputer Center)
- Human biological signal (EMG) acquisition, filtering, and processing (Cambridge Electronics Design (CED) Amplifiers, National Instruments DAQ Boards, Function Generators, Matlab)
- Intraoperative human nerve stimulation with a computer-controlled nerve cuff electrode
- Software development and data acquisition (Matlab)
- Interacting with surgeons, nurses, therapists, engineers and Regulatory Affairs personnel
- Experimental equipment specification, design, implementation, and troubleshooting

*Assisting Researcher* – Intraoperative evaluation of a spiral nerve cuff electrode for use in a lower extremity neuroprosthesis

- Assisting with experimental setup, data collection, and analysis
- Interacting with surgeons, nurses, therapists, and engineers

- 01/02-11/03     **Graduate Research Assistant – Case Western Reserve University**     *Cleveland, OH*  
Mentor: Dr. Warren Grill

*Masters Research* – “A model of excitation of retinal ganglion cells during extracellular epiretinal stimulation”

- Neural Stimulation Computer Simulations and Analysis (Matlab, Neuron, Excel, Minitab)

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## AWARDS AND HONORS: 22 Total *(full list available upon request)*

- 3<sup>rd</sup> Place, Research ShowCASE 2009.
- The Cleveland Clinic Foundation Award for Best Oral Presentation, 2008 Biomedical Graduate Student Symposium
- Poster Award, 2008 Biomedical Engineering Research ShowCASE
- Ohio 3<sup>rd</sup> Frontier Innovation Incentives in Technology (IIT) Graduate Student Fellowship 2006, 2007
- 1<sup>st</sup> Place, Intramural Singles Racquetball Tournament 2007
- 1<sup>st</sup> Place, Robbie Robinson Neural Engineering and Rehabilitation Day Conference 2007
- Honorable Mention for graduate research, 2007 Research ShowCASE
- 2<sup>nd</sup> Place, Intramural Singles Racquetball Tournament 2006
- 2<sup>nd</sup> Place, Robbie Robinson Neural Engineering and Rehabilitation Day Conference: 2005, 2006
- Marcus Singer Award for Best Poster Presentation, 2005 Biomedical Graduate Student Symposium
- 3<sup>rd</sup> Place, Robbie Robinson Neural Engineering and Rehabilitation Day Conference Poster Contest, 2003

## PEER-REVIEWED PUBLICATIONS:

- **M. A. Schiefer**, K. H. Polasek, R. G. C. J. Pinault, R. J. Triolo, D. J. Tyler, "Selective stimulation of the common human femoral nerve with a Flat Interface Nerve Electrode," *J Neur Eng*, Submitted, 2009.
- K. H. Polasek, **M. A. Schiefer**, G. C. J. Pinault, R. J. Triolo, D. J. Tyler, "Intraoperative evaluation of the spiral nerve cuff electrode on the femoral nerve trunk," *J Neur Eng*, In Press, 2009.
- Y. Grinberg, **M. A. Schiefer**, D. J. Tyler, K. J. Gustafson, "Fascicular perineurium thickness, size, and position affect model predictions of neural excitation," *IEEE Trans Neur Sys Rehab Eng*, 16: 572-581, 2008.
- **M. A. Schiefer**, R. J. Triolo, D. J. Tyler, "A model of selective activation of the femoral nerve with a flat interface nerve electrode for a lower extremity neuroprosthesis," *IEEE Trans Neur Sys Rehab Eng*, 16: 195-204, 2008.
- **M. A. Schiefer**, W. M. Grill, "Sites of neuronal excitation by epiretinal electrical stimulation," *IEEE Trans Neur Sys Rehab Eng*, 14: 5-13, 2006.
- D. C. Lee, A. L. Jensen, **M. A. Schiefer**, C. W. Morgan, W. M. Grill, "Structural mechanisms to produce differential dendritic gains," *Brain Research*, 1033: 117-127, 2005.

## ABSTRACTS AND PUBLIC PRESENTATIONS: 38 Total *(list available upon request)*

## LEADERSHIP

- 05/04-06/08**     **Graduate Student Senate (GSS)** – President, Biomedical Engineering Senator, School of Engineering Representative, Corresponding Secretary, Organizations and Allocations Committee Chair, Diekhoff Award Committee Chair, Vfund Award Committee Chair, Preparing Future Faculty/Professionals (PFF/PFP) Committee Chair, At-Large Executive Officer
- 04/02-05/07**     **Biomedical Engineering Graduate Student Association (GSA)** – President, Vice President, Committee Chair, Senator

**PROFESSIONAL SOCIETIES:** The Institute of Electrical and Electronics Engineers, Engineering in Medicine and Biology Society (IEEE – EMBS), The Biomedical Engineering Society (BMES), Tau Beta Pi (Engineering Honor Society), The Order of the Engineer

## INTERESTS

- Racquetball, Tennis, Bowling, Tae Kwon Do, Photography, Hiking, Camping, Traveling, Web Page Design, Piano, Gourmet Cooking

*References available upon request.*