

# Job Job Candidate, Ph. D.

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Address \* email \* Tel

## RESEARCH AND DEVELOPMENT QUALIFICATIONS

- Breadth and depth of academics as well as research focusing on and utilizing Computational and Medical Physics and Bio-optics knowledge
- Experience building mathematical model described by transient multidimensional nonlinear partial differential equations using finite element and finite difference methods
- Proven abilities to solve wave propagation in many body systems by multiple scattering and plan wave expansion methods
- COMSOL, Matlab, Fortran, C, ImageJ, LabView expertise
- Abilities to fitting algorithm and numerical, data, and image analysis
- Experience using *in vivo* and *in vitro* medical imaging using confocal microscopy as well as *in vivo* and *in vitro* fluorescence spectroscopy
- Hands on experience with diode, dye, and argon ion laser systems
- Experience with cell surviving assay, cell culture, and tumor growth on clinical animals

## RESEARCH AND MEDICAL PHYSICS EXPERIENCE

**Postdoctoral Research Fellow, University of Pennsylvania**  
*Radiation Therapy and Photodynamic Cancer Therapy (PDT)*

**Philadelphia, PA**  
2008 – present

- Actively participate in medical physicist residency program specializing in therapeutic radiologic physics.
- Perform quality assurance for Varian linear accelerator.
- Use COMSOL and MATLAB to build a mathematical model for PDT clinical dosimetry.
- Reconstruct image of optical properties for prostate cancer using finite element method and COMSOL.

**Ph. D. Job Candidate, University of Rochester**  
*Photodynamic Cancer Therapy (PDT)*

**Rochester, NY**  
2004 – 2008 Jun

- Use computational biophysics principals and techniques, seek to develop *in vivo* dynamic oxygen transport model to inform treatment efficacy of PDT
- Utilize confocal microscopy, fluorescence spectroscopy, and cell surviving assay to develop a potential dosimeter for PDT
- Implement numerical model and medical imaging to evaluate treatment dose and long-term tumor response
- Apply mathematical model to analyze clinical human patient data and treatment-induced blood flow change

**Research Assistant, National Central University**  
*Wave Localization and Many Body System*

**Taiwan**  
1999 - 2003

- Built multiple scattering computational model to describe wave propagation in electrical dipolar systems, photonic crystals, and negative refractive index materials.
- Implemented Fourier method to explore pulse propagation in bubbly water

## DOCTORAL AND UNDERGRADUATE STUDIES

**Ph.D. in Physics, University of Rochester**

**2008, Rochester, NY**

**B.Sc. in Physics (Top 5 student), National Central University**

**2001, Taiwan**

## PUBLICATIONS

**Job Candidate, Ph. D.**, W.J. Cottrell, S. Mitra, A.R. Oseroff and T.H. Foster. "Simulations of measured photobleaching kinetics in human basal cell carcinomas suggest blood flow changes during 5-aminolevulinic acid-mediated photodynamic therapy." Submitted to **Phys. Med. Biol.**

**Job Candidate, Ph. D.**, S. Mitra, and T.H. Foster. "Photodynamic dose does not correlate with long-term tumor response to mTHPC-PDT performed at several drug-light intervals." **Med. Phys.** 35, 3518-3526 (2008)

**Job Candidate, Ph. D.**, J.D. Wilson, M.E. Kenney, S. Mitra, and T.H. Foster. "Irradiation-induced enhancement of Pc 4 fluorescence and changes in light scattering are potential dosimeters for Pc 4-PDT." **Photochem. Photobiol.**, 83, 1056 (2007).

**Job Candidate, Ph. D.**, S. Mitra, and T.H. Foster. "A comprehensive mathematical model of microscopic dose deposition in photodynamic therapy." **Med. Phys.**, 34, 282-293 (2007).

C.H. Kuo, **Job Candidate, Ph. D.** and Z. Ye. "Fluctuation and localization of acoustic waves in bubbly water." **Appl. Phys. Lett.**, 83, 4247 (2003).

**Job Candidate, Ph. D.** and Z. Ye. "A simulation of study of localization electromagnetic waves in a two-dimensional random dipolar system." **Phys. Rev. E.**, 68, 066609 (2003).

**Job Candidate, Ph. D.** and Z. Ye. "Diffusive and localization behavior of electromagnetic waves in a two-dimensional random dipolar system." **Phys. Rev. E.**, 68, 046608 (2003).

**Job Candidate, Ph. D.** and Z. Ye. "Acoustic pulse propagation and wave localization in bubbly water." **Phys. Rev. E.**, 64, 056607 (2001).

**Job Candidate, Ph. D.** and Z. Ye. "Collective behavior in electrical dipolar systems." **J. Phys.: Condens. Matter**, 13, 8031 (2001).

Z. Ye and **Job Candidate, Ph. D.**. "Localize energy in random media: A new phase state." **Chin. J. Phys.** 38, L1003 (2000).

## PRESENTATIONS

**Job Candidate, Ph. D.**, W.J. Cottrell, S. Mitra, A.R. Oseroff and T.H. Foster. "Simulations of measured photobleaching kinetics in human basal cell carcinomas suggest blood flow changes during 5-aminolevulinic acid-mediated photodynamic therapy." SPIE Photonics West, San Jose, CA (2008).

**Job Candidate, Ph. D.**, S. Mitra, and T.H. Foster. "A comprehensive mathematical model of microscopic dose deposition in photodynamic therapy." SPIE Photonics West, San Jose, CA (2007).

**Job Candidate, Ph. D.**, S. Mitra, and T.H. Foster. "Complete model of oxygen transport in photodynamic therapy: A simulation of oxygen dynamics *in vivo*." 11th Congress of the European Society for Photobiology, Aix-Les-Bains, France (2005).

## ADDITIONAL

- Second lieutenant at Military, Taiwan, July 2001 – February 2002
- Fluent in Mandarin Chinese