

# KIMBERLY S. REICHEL

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6100 Main Street, Brockman MS-378  
Houston, TX 77021, USA

## EDUCATION

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**PhD/ MS** Rice University, Applied Physics/Electrical Engineering 8/2010-Present  
Advisor: Dr. Daniel Mittleman

**BS** University of Miami, Majors: Pure Physics and Applied Mathematics 5/2010  
Minor: Computer Science

## HONORS AND AWARDS

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**Mission:Optibox Competition, First Place** 2012  
Youth Science Education Outreach Demonstration, Optical Society of America (OSA)

**Computer Science and Mathematics for Scientists Scholarship (CSMS)** 2008  
Scholarship, National Science Foundation (NSF)

**NASA Undergraduate Student Research Program (USRP)** 2008  
Participant, University Space Research Association (USRA)

**Bowman Ashe Scholarship** 2005  
Scholarship, University of Miami

**Florida Academic Scholarship** 2005  
Scholarship, State of Florida

## RESEARCH EXPERIENCE

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**Mittleman Terahertz Lab**, Rice University, Houston, TX 10/10-Present

- Studied, disassembled, and reassembled terahertz time-domain spectroscopy (THz-TDS) setup to move into new research lab
- Used commercial THz setup to study performance of a parallel-plate wave guide with internal resonant cavity grooves as a multichannel microfluidic sensor
- Investigated THz evanescent energy coupling between finite-width parallel-plate waveguide (PPWG) arrays experimentally and computationally

**Florida Space Grant Consortium (FSGC)**, Kennedy Space Center, FL 12/09  
**Undergraduate Academy**

- Prepared camera payload for meteorological balloon release
- Tested failure modes and tested different receiving Yagi style antennas
- Collaborated with a new team, and planned work schedule to meet strict launch deadlines

**NASA-Johnson Space Center**, Houston, TX

1/08-8/08

**Undergraduate Student Research Program (USRP)**

- Worked in the Engineering Avionics Division in the Electromagnetic Systems Branch with the Antenna Group
- Completed design and analysis of antennas using Computational Electromagnetics (CEM), used Method of Moments (MoM) and specialized software Electromagnetic Interactions Generalized (EIGER)
- Created 3-D models to be used for analysis, completed study on Russian cosmonaut suit, prototyped applications of Fresnel Zone theory

**JDL Technologies**, Fort Lauderdale, FL

6/06-8/06

**Field Worker**

- Installed LANDesk software on computers of the Broward County School System
- Provided cross platform technical assistance (OS9-X, Windows 95-XP)
- Anticipated problems and performed maintenance as needed

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**TEACHING EXPERIENCE**

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**Fundamentals of Electrical Engineering I**, Rice University, Fall 2012

**Grader**, Electrical and Computer Engineering Department

**Photonic Measurements Lab**, Rice University, Spring 2011, Spring 2012

**Teaching Assistant**, Electrical and Computer Engineering Department

Course Goals: Provide students with experimental experience in a modern optical laboratory. Reinforce concepts learned in earlier courses through practical application. Prepare students for experimental optics and photonics research in industry or in graduate school.

Class Size: 7-11

- Helped update and review lab instructions to teach undergraduate students how to use and understand optical components with a laser light source
- Each week set up equipment for experiment and graded all lab assignments
- Answered any questions throughout the lab

**Mentoring**, Rice University

- Vanessa Navarez, NSF Research Experience for Teachers (RET) Program, 6/12
  - 5<sup>th</sup> Grade Teacher at Ketelson Elementary School
  - Internship in graduate lab to involve teachers in research in order to translate their research experiences and new knowledge into classroom activities
- Brandi Nicholson, Rice School Science and Technology (SST) Program, 12/11-3/12
  - Internship for SST staff to better incorporate scientific research methods into training for teachers and to build collaborative partnerships
- Jonathan Jones, Research Experience for Undergraduates (REU) Program, 5/11-8/11
  - Taught terahertz time-domain spectroscopy (THz-TDS) techniques

**Piano Teacher**, Sound Picture Recording Studios, Sunrise, FL, 8/02-5/05

- Taught weekly beginner piano lessons for ages 6-40

## PUBLICATIONS

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### *Journal Papers*

Victoria Astley, Kimberly S. Reichel, Jonathan Jones, Rajind Mendis, and Daniel M. Mittleman, "A mode matching analysis of dielectric-filled resonant cavities coupled to terahertz parallel-plate waveguides," *Optics Express*, 20, 21766-21772 (2012).

Victoria Astley, Kimberly Reichel, Jonathan Jones, Rajind Mendis, and Daniel M. Mittleman, "Terahertz multichannel microfluidic sensor based on parallel-plate waveguide resonant cavities," *Applied Physics Letters*, 100, 231108 (2012). [Also available in the June 18, 2012 issue of the *Virtual Journal of Nanoscale Science and Technology*.]

### *Video Journal*

Victoria Astley, Kimberly Reichel, Rajind Mendis, and Daniel M. Mittleman, "Terahertz microfluidic sensing using a parallel-plate waveguide sensor," *Journal of Visualized Experiments (JoVE)*, 66, e4304, (2012).

### *Conference Papers (Abstract-Reviewed)*

Kimberly S. Reichel, Naokazu Sakoda, Rajind Mendis, and Daniel M. Mittleman, "Evanescent Wave Coupling in Terahertz Waveguide Arrays," *Frontiers in Optics (FiO)*, Optical Society of America (OSA), Rochester, NY, October 14-18, 2012, General Optical Sciences II (FTh2E).

Kimberly Reichel, Victoria Astley, Jonathan Jones, Rajind Mendis, and Daniel M. Mittleman, "Terahertz Multichannel Microfluidic Sensor Based on Parallel-Plate Waveguide Resonant Cavities." *Proceedings of IRMMW-THz*, Houston, TX, October 2-6, 2011, pp. 34-36.

## PRESENTATIONS

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**Paper Presentation**, "Evanescent Wave Coupling in Terahertz Waveguide Arrays," *Frontiers in Optics (FiO)*, Optical Society of America (OSA), 10/12.

**Research Presentation**, "Terahertz Energy Coupling Between Parallel-Plate Waveguides," Rice Quantum Institute (RQI) Colloquium, 8/12.

## PROFESSIONAL TRAINING

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**Student Leadership Conference, Optical Society of America (OSA)**  
Rochester Riverside Convention Center, Rochester, NY, 10/14/12  
Training, networking, and resources for leaders of OSA student chapters

### **COMSOL Workshop**

University of Phoenix, Sugar Land, TX, 4/12/12

Introduction and hands-on tutorial in COMSOL Multiphysics

### **PROFESSIONAL AFFILIATIONS**

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#### **Rice University Student Chapter of the Optical Society of America (RU-OSA), 2012**

Founding Member, Treasurer

#### **Electrical xor Computer Engineering Leaders (ExCEL), 2012**

Outreach Coordinator

#### **Applied Physics Graduate Student Association (APGSA), 2011**

Treasurer

#### **Institute of Electrical and Electronics Engineers (IEEE), 2011**

Member

#### **American Scientific Affiliation (ASA), 2011**

Member

#### **American Physical Society (APS), 2010**

Member

#### **National Space Society (NSS), 2008**

Member

### **PROFESSIONAL AND COMMUNITY SERVICE**

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#### **Science Educators' Day (EDAY), Rochester, NY**

Optics Demonstration Presenter, 10/12

#### **Rice Graduate Christian Fellowship (RGCF), Houston, TX**

President, 5/12-Present, Vice President, 5/11-5/12, Member, 8/10-Present

#### **Science Fair Judge, Houston, TX**

Houston Regional Science Fair, George R. Brown Convention Center, 3/2/12

#### **Mission24, Houston, TX**

Music Ministry Leader, 8/10-Present

#### **YouthWorks, Steubenville, OH**

Site Director, 5/09-8/09

#### **Chi Alpha University Christian Fellowship, Miami, FL**

President, 8/08-05/10