

10 years experience

- Scientific Research
- Project Management
- Leadership and Outreach
- Interdisciplinary Collaboration

EDUCATION

- **Cornell University**, Ithaca, NY
Ph.D., Department of Chemistry and Chemical Biology *2007 – 2014*
Minor: Materials Chemistry and Biophysics
Research Advisor: Professor. Ulrich Wiesner
- **University of North Carolina at Charlotte**, NC *2005 – 2007*
M.S. in Chemistry Department of Chemistry (Inorganic Chemistry)
Thesis Advisor: Professor. Professor. Thomas Schmedake
- **Indian Institute of Technology**, Delhi, India *2003 – 2005*
M.S. in Chemistry, Department of Chemistry
- **Delhi University**, Delhi, India *2000 - 2003*
B.S. in Chemistry, Physics Minor

EMPLOYMENT HISTORY

- **Johns Hopkins University**, Baltimore MD *2016 – present*
OXIDE, Research Scientist and Assistant Research Program Manager
- **Georgia Institute of Technology**, Atlanta GA *2015 – 2016*
OXIDE, Research Scientist and Assistant Research Program Manager
- **Georgia Institute of Technology**, Atlanta GA *2013 – 2015*
Post-doctoral Research Scientist, Advisor: Prof. C. Payne
- **Cornell University**, Ithaca, NY *2007 – 2008*
Teaching Assistant, General Chemistry
- **University of North Carolina at Charlotte**, NC *2005 - 2006*
Graduate Laboratory Teaching Assistant, General Chemistry

SCIENCE POLICY and PROJECT MANAGEMENT

- Johns Hopkins University, Baltimore MD** *2016 - current*
OXIDE, Department of Chemistry
- Georgia Institute of Technology, Atlanta GA** *2015 - 2016*
OXIDE, School of Chemistry and Biochemistry

The Open Chemistry Collaborative in Diversity Equity (OXIDE) is an initiative to change the academic chemistry infrastructure from the top down by working with the chairs of leading research-active chemistry departments to reduce inequitable policies and practices that have led to disproportionate representation of academic faculties with respect to gender, race-ethnicity, disabilities, and sexual orientation.

- **National Faculty Demographics Survey:** Maintain a database of faculty demographics for research based chemistry departments and publish annual demographic assessments in partnership with Chemical and Engineering News.
- **National Diversity Equity Workshop (NDEW):**
 - Organize and conduct workshops to facilitate discussions between department chairs, social scientists and federal agency representatives regarding research findings on diversity.
 - Develop strategies that lead to policies for improving diversity at the faculty level.

- **Developed and maintained** website for OXIDE to disseminate information regarding workshops conducted and solutions towards diversity equity.
- **Developed** climate survey to assess the effect of departmental climate on faculty, graduate students, post-doctoral fellows and staff members.

Georgia Institute of Technology, Atlanta GA

Post-doctoral Research Scientist, School of Chemistry and Biochemistry

2013 - 2015

- Supervised and oversaw general laboratory operation and maintained protocols as Chemical, Laser and Biological safety officer in compliance with EH&S and university policies.
- Scientific liaison for teachers on Indian reservations in South Dakota via the Georgia Tech-*Teach for America* and *Native Alliance Initiative* partnership to improve STEM education.
- Led workshop for high school chemistry teachers in Clayton County, GA as a scientific expert to develop teaching methodologies in classroom with diverse academic backgrounds as a part of the *Center for Education Integrating Science, Mathematics and Computing* (CEISMC) initiative.
- Supervised and assisted in development of experimental and laboratory skills of a student as a part of the NSF supported Georgia Perimeter College *Science Technology Engineering and Mathematics Talent Expansion Program* (STEP).
- Coordinated and planned professional and community events for the *Young Professional Group* School of Chemistry and Biochemistry for post-doctoral fellows and research scientists.

Cornell University, Ithaca, NY

2007– 2014

PhD Research Assistant, Department of Chemistry and Chemical Biology

- Volunteered as a teaching assistant for Ancient Greek philosophy at the Cayuga Correctional facility through the *Cornell Prison Education Program* to support academic aspirations of incarcerated individuals.
- Provided scientific support, mentoring and program development for the *Nanobiotechnology* Center's high school summer internship program (Summer 2009).

RESEARCH and TEACHING EXPERIENCE

Georgia Institute of Technology, Atlanta GA

2013 - 2015

Post-doctoral Research Scientist, School of Chemistry and Biochemistry

- **Studied nanoparticle-cell interactions** in biologically relevant medium and fluorescence imaging
 - **Surface functionalization of Nanoparticles and cellular binding:**
 - Tailored nanoparticle surface charges using carbodiimide crosslinking chemistry to study nanoparticle binding to cells.
 - Studied nanoparticle binding and internalization in presence of serum proteins to mammalian cells by implementing flow cytometry and immunofluorescence based techniques towards biomedical applications.
 - **Cellular imaging using Fluorescence Microscopy:**
 - Designed and optimized immunocytochemistry labeling protocols for lysosome and associated enzymes in collaboration with Prof. Manu Platt at the School of Biomedical Engineering in Ga Tech.
 - Used Super-resolution microscopy to study changes in lysosome size under stressed conditions.
 - Developed research protocols and reports for sample preparation, fluorescence imaging and analysis of human cells and macrophages.
 - Supervised and mentored 2 graduate students and 2 undergraduate students over the past year.
 - Co-instructor for an undergraduate level class (Fundamental Concepts in Data Analysis), lead instructor Prof. C. Payne.

Cornell University, Ithaca, NY

2007– 2014

PhD Research Assistant, Department of Chemistry and Chemical Biology

- **Designed and synthesized sol-gel based** bioluminescent nanoparticles for intracellular imaging
 - **Chemiluminescent Nanoparticles:** Developed chemiluminescence dye incorporated mesoporous silica nanoparticles and tailored kinetics for hydrogen peroxide sensing as a sub-contracted industrial collaboration with Physical Science Inc. spanning two years.
 - **Multi-color fluorescent silica nanoparticles and characterization:**
 - Designed and synthesized multicolor bright fluorescent silica nanoparticles as colloidal barcodes for intracellular

imaging.

- Optimized particle surface chemistry for biocompatibility for cellular imaging.
- Built, calibrated and developed protocols for in-house Fluorescence Correlation Spectroscopy (FCS) for quantitative analysis of dye incorporated silica nanoparticles.
- Designed, synthesized and optimized fluorescent silica nanoparticles for biological imaging and sensing towards FDA approval.
- Managed, recruited, and mentored 9 graduate and undergraduate students over six years.
- Edited, authored and reviewed research papers for publication.
- Wrote monthly and final reports for sub-contracted projects and multiple grants spanning two to five years.
- Acted as a recitation and laboratory-teaching assistant for general chemistry laboratory.

Masters of Science, Research Assistant, Department of Chemistry
University of North Carolina at Charlotte, Prof. T. Schmedake Group

2005 – 2007

- Designed and synthesized core/shell III-Nitride quantum dots for UV-LED applications.
- Teaching assistant for general chemistry laboratory.

Masters of Science, Research Assistant, Department of Chemistry
Indian Institute of Technology, A. Mittal Group (School of Biological Sciences)

2003-2005

- Developed computational code to understand kinetics of F1 ATPase as a molecular motor.

RELEVANT SKILLS

Cell culture and Synthesis:

- Mammalian cells and human macrophage cultures
- Sol-gel chemistry
- Inorganic nanoparticle synthesis
- Surface functionalization of nanoparticles and cell culture dishes
- Carbodiimide crosslinker chemistry

Computing:

- Image processing tools, Image J
- Adobe Illustrator, Adobe Photoshop
- Origin, MATLAB

Instrumentation:

- UV-Visible Spectroscopy
- Fluorescence spectroscopy
- Infrared spectroscopy (FTIR)
- Dynamic Light Scattering (DLS)
- Flow Cytometry
- Fluorescence correlation spectroscopy (FCS)
- Energy-dispersive X-ray spectroscopy (EDS)
- Super-resolution fluorescence microscopy
- Confocal microscopy
- Scanning electron microscopy (SEM)
- BET surface analysis
- Gel electrophoresis
- Hemocytometer

PUBLICATIONS & SELECT ABSTRACTS

1. R. Hernandez, D. Stallings, and **S. K. Iyer**. “The URM, Gender faculty demographics data collected by OXIDE” Abstracts of Papers, **251st** A.C.S. National Meeting, PRES 67 (2016)
2. D. Stallings, R. Hernandez and **S. K. Iyer** “Effective usage of social media and #DiversitySolutions to discuss solutions to improve diversity”. Abstracts of Papers, **251st** A.C.S. National Meeting, PRES 67 (2016)
3. M. Benezera, O. Penate-Medina, P.B. Zanonico, D. Schaer, H. Ow, A. Burns, E. DeStanchina, V. Longo, E. Herz, **S. K. Iyer**, J. Wolchok, S. M. Larson, U. Wiesner, M.S. Bradbury. “Multimodal Silica nanoparticles are effective cancer – targeted probes in a model human melanoma” *J. Clin Invest.*, 121 (7), 2011, 2768-2780.
4. B. Cohen, C. Martin, **S. K. Iyer**, U. Wiesner, A. Douhal, “Single Dye Molecule Behavior in Fluorescence Core-Shell Silica Nanoparticles” *Chem. Mater.*, 24, 2012, 361-372.

INTELLECTUAL PROPERTY

1. **S.K. Iyer**, U. Wiesner. “Multicolor fluorescent nanoparticles and methods of making and using same.” International application # **PCT/US2014/017342**.
2. **S.K. Iyer**, K. Sarakune, U. Wiesner. “Tailoring the kinetics of Chemiluminescence of dye incorporated Silica nanoparticles.” (Disclosure filed).

AWARDS

- NIH Broadening Experiences in Scientific Training (BEST) Program Trainee 2014-2015
- Thomas Walsh Graduate Research Fellowship at University of North Carolina, Charlotte 2006-2007

PRESENTATIONS

1. “Application of Fluorescence Correlation Spectroscopy (FCS) towards dye incorporated silica nanoparticles”, Electron Devices Society, Cornell University, Fall, 2009.
2. “C dots: Fluorescent Silica Nanoparticles for Nanomedicine”, Rochester Bioventure Center, Spring, 2009.
3. “Fluorescent dyes in super-resolution microscopy”, Biomedical engineering seminar series, Cornell University, Fall 2009.
4. “Synthesis and Characterization of III-Nitride Quantum Dots”, Fall ACS Meeting, 2006.

REFERENCES

- Available upon request