

## EDUCATION AND RESEARCH PROFILE

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### **Assistant Professor 2013- Present**

Biomedical, Chemical and Materials Engineering Department  
San Jose State University

### **Research Assistant Professor, 2010-2013**

Ford Fellow 2011-2013  
Institute for Lasers, Photonics and Biophotonics  
University at Buffalo (SUNY)  
Supervisor: Prof. Paras N.Prasad

### **Postdoctoral Researcher, 2009 – 2010**

National Institute of Health (NIH) Diversity Supplement  
Institute for Lasers, Photonics and Biophotonics  
University at Buffalo (SUNY)  
Supervisor: Prof. Paras N.Prasad

### **PhD, Chemical and Biological Engineering, June 2009**

National Science Foundation (NSF) IGERT Fellow  
Alliance for Graduate Education Participation (AGEP) Scholar  
University at Buffalo (SUNY)  
Dissertation Title: Silicon Quantum dots and Biophotonic Applications Thereof  
Advisor: Dr. Mark T. Swihart

### **B.S. Chemical Engineering, September 2004**

NSF REU Scholar, Ronald E. McNair Honors Program, Daniel Acker Scholars Program, CSTEP Scholar, SUNY AMP scholar  
University at Buffalo (SUNY)

## PUBLICATIONS

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1. **Folarin Erogbogbo**, Jasmine May, Mark Swihart, Paras N. Prasad, Katie Smart, Seif El Jack, Dariusz Korczyk, Mark Webster, Ralph Stewart, Irene Zeng, Mia Jullig, Katherine Bakeev, Michelle Jamieson, Nikolas Kasabov, Banu Gopalan, Linda Liang, Raphael Hu, Stefan Schliebs, Silas Villas-Boas, Patrick Gladding. Development of Silicon Quantum Dot Theranostics Using Metabolomic and Proteomic Data In Cardiac Ischaemia. *Theranostics*, 2013
2. **Folarin Erogbogbo**, Jianwei Liu, Ken-Tye Yong, Ling Ye, Jing Liu, Rui Hu, Hongyan Chen, Yazhuo Hu, Yi Yang, Jinghui Yang, Indrajit Roy, Nicholas A. Karker, Mark T. Swihart, and Paras N. Prasad, Assessing Clinical Prospects of Silicon Quantum Dots: Studies in Mice and Monkeys, *ACS Nano* 2013.
3. **Folarin Erogbogbo**, Tao Lin, Phillip M. Tucciarone, Krystal M. LaJoie, Larry Lai, Gauri D. Patki, Paras N. Prasad, and Mark T. Swihart, On-Demand Hydrogen Generation Using Nanosilicon: Splitting Water without Light, Heat, or Electricity, *Nano Letters*, 13, 2013, 451-56. (Highlighted by Nature, Highlighted by C&E News, Most Highly Read Nanoletters article - 1<sup>st</sup> Quarter 2013, Community Choice in Nature)
4. **Folarin Erogbogbo**, Xin Liu, Jasmine May, Mark T. Swihart, Paras N. Prasad Plasmonic Gold and Luminescent Silicon Nanoplatfoms for Multimode Imaging of Cancer Cells, *Integrative Biology*, 2012
5. Law WC, Mahajan SD, Kopwiththaya A, Reynolds JL, Liu M, Liu X, Chen G, **Erogbogbo F**, Vathy L, Aalinkeel R, Schwartz SA, Yong KT, Prasad PN. Gene Silencing of Human Neuronal Cells for Drug Addiction Therapy using Anisotropic Nanocrystals. *Theranostics* 2012; 2(7):695-704.
6. **Folarin Erogbogbo**, Ching-Wen Chang, Jasmine L. May, Liwei Liu, Rajiv Kumar, Wing-Cheung Law, Hong

- Ding, Ken Tye Yong, Indrajit Roy, Mukund Sheshadri, Mark T. Swihart, Paras N. Prasad Bioconjugation of Luminescent Silicon Quantum Dots to Gadolinium Ions for Bioimaging Applications *Nanoscale*, 2012
7. **Folarin Erogbogbo**, Ching-wen Chang, Jasmine May, Paras N. Prasad, Mark T. Swihart Energy Transfer from a Dye Donor to Enhance the Luminescence of Silicon Quantum Dots *Nanoscale*, 2012
  8. Jasmine Louise May, **Folarin Erogbogbo**, Ken-Tye Yong, Hong Ding, Wing-Cheung Law, Mark T. Swihart, Paras N. Prasad Enhancing silicon quantum dot uptake by pancreatic cancer cells via pluronic® encapsulation and antibody targeting. *Journal of Solid Tumors*, 2012
  9. Tien, Chen-An , **Erogbogbo, Folarin**, Chang, Ching-Wen , Adjei-Baffour, Priscilla , Law, Wing-Chueng, and Swihart, Mark. Biodegradable Luminescent Silicon Quantum Dots for Two Photon Imaging Applications . Available from Nature Precedings, 2012
  10. **Folarin Erogbogbo**, Tian Hang Liu, Ramadurai Nithin, Phillip Tuccarione, Larry Lai, Mark Swihart, Paras N. Prasad Creating Ligand Free Silicon germanium Alloy Nanocrystals *Inks* in press *ACS Nano*, 2011
  11. **Folarin Erogbogbo**, Ken-Tye Yong, Indrajit Roy, Rui Hu, Wing-Cheung Law, Weiwei Zhao, Hong Ding, Paras N. Prasad, and Mark T. Swihart In Vivo Targeted Cancer Imaging, Sentinel Lymph Node Mapping and Multi-Channel Imaging with Biocompatible Silicon Nanocrystals. *ACS Nano*, 2011
  12. **Folarin Erogbogbo**, Chen-An Tien, Ken-Tye Yong, Indrajit Roy. Mark T. Swihart, Paras N. Prasad Bioconjugation of Luminescent Silicon Quantum Dots for Selective Uptake by Cancer Cells *Bioconjugate Chemistry*, 2011
  13. Hong Ding, Ken-Tye Yong, Wing-Chueng Law, Indrajit Roy, Rui Hu, Fang Wu, Weiwei Zhao, Kun Huang, **Folarin Erogbogbo**, Earl J Bergey and Paras N Prasad Non-invasive tumor detection in small animals using novel functional Pluronic nanomicelles conjugated with anti-mesothelin antibody *Nanoscale*, 2011
  14. Liwei Liu, Wing-Cheung Law, Ken-Tye Yong, Indrajit Roy, Hong Ding, **Folarin Erogbogbo**, Xihe Zhang and Paras N Prasad Multimodal imaging probes based on Gd-DOTA conjugated quantum dot nanomicelles *Analyst*, 2011
  15. **Folarin Erogbogbo**, Ken-Tye Yong, Indrajit Roy, Rui Hu, Wing-Chueng Law, Hong Ding, Paras N. Prasad, and Mark T. Swihart Biocompatible Multimodal Magnetofluorescent Probes: Luminescent Silicon Nanoparticles Couples With Superparamagnetic Iron(III) Oxide *ACS Nano*, 2010, **4 (9)**, pp 5131–5138
  16. Liwei Liu, Hong Ding, Ken-Tye Yong, Indrajit Roy, Wing-Cheung Law, Atcha Kopwiththaya, Rajiv Kumar, **Folarin Erogbogbo**, Xihe Zhang and Paras N. Prasad Application of Gold Nanorods for Plasmonic and Magnetic Imaging of Cancer Cells *Plasmonics*, 2010
  17. **Folarin Erogbogbo** and Mark T Swihart, “Imaging Pancreatic Cancer with Folic Acid Terminated Luminescent Silicon Nanocrystals” *AIP Conf.Proc.*1275,35,2010
  18. Anoop Gupta, Folarin Erogbogbo, Mark T. Swihart, Harmut Wiggers Photoluminescence behavior of silicon nanocrystals: role of surface chemistry and size *mat. res. soc. symp. proc.*, 1145-mm10-04 (2009)
  19. **Folarin Erogbogbo**, Ken-Tye Yong, Indrajit Roy, GaiXia Xu, Paras N. Prasad, and Mark T. Swihart, Biocompatible, Luminescent Silicon Quantum Dots for Imaging Cancer Cells *ACS Nano*, 2, 5, 873 - 878, 2008
  20. Guang S. He, Qingdong Zheng, Ken-Tye Yong, **Folarin Erogbogbo**, Mark T. Swihart, and Paras N. Prasad Two- and three-photon absorption and frequency upconverted emission properties of silicon quantum dots in chloroform and in water *Nano Letters* 2008; 8(9); 2688-2692
  21. **Folarin Erogbogbo**, Mark T.Swihart, Photoluminescent Silicon Nanocrystals with Mixed Surface Functionalization for Biophotonics *Proceedings of the Material Research Society Annual Conference, Fall 2006*
  22. **Folarin Erogbogbo** , Mark T Swihart , Eli Ruckenstein Organically capped silicon nanoparticles with blue photoluminescence prepared by hydrosilylation followed by oxidation. *Langmuir*. 2006 Apr 25; 22 (9):4363-70

### SELECTED PRESENTATIONS

1. **Folarin Erogbogbo** Multifunctional Nanoparticles for Theranostics of Infectious Diseases 1st Pan-African Summer School in Nanomedicine, 4-10 Nov 2012, Pretoria, South Africa

2. **Folarin Erogbogbo** Rational Design of nanoplatform for Biomedical Applications Meet the Faculty Candidate Poster Session, Atlanta, GA, October 2012.
3. **Folarin Erogbogbo** “Gas Phase synthesis of Gadolinium Nanoparticles for Magnetic Resonance Imaging Contrast Agents” American Institute of Chemical Engineers Annual Conference. Minneapolis, MN, October, 2011
4. **Folarin Erogbogbo** “Multimodal Bioimaging Agents Based on Silicon Quantum Dots” American Institute of Chemical Engineers Annual Conference. Minneapolis, MN, October, 2011
5. **Folarin Erogbogbo** “Developing Multimodal Bioimaging Agents Based on Silicon Quantum Dots” Ford Fellowship Conference. Santa Ana, CA, October, 2011
6. **Folarin Erogbogbo** “Multimodal Bioimaging Agents Based on Silicon Quantum Dots”. Hamilton, ON, August, 2011
7. **Folarin Erogbogbo** “Multimodal Cancer Therapeutics and Imaging Agents Based on Silicon Quantum Dots”. Waterville, ME, July, 2011
8. **Folarin Erogbogbo** “Conducting Research” Collegiate Science and Technology Entry Program and SUNY Louis Stokes alliance for Minority Participation. University at Buffalo, New York, May 2009
9. **Folarin Erogbogbo** “Luminescent, Biocompatible Silicon Quantum dots for Cancer Cell Applications : Sentinel Lymphnode Mapping and Tumor Targeting” *Invited Talk* Chemical and Biological Engineering Departmental Seminar, University at Buffalo. New York, February 2009.
10. **Folarin Erogbogbo**, Mark T. Swihart. “Nanotechnology for Cancer Diagnosis and Therapy” Alliance for Graduate Education and the Professoriate Colloquium, University at Buffalo, New York, January 2009
11. **Folarin Erogbogbo**, Ken-Tye Yong, Hong Ding, Paras N. Prasad, Mark Swihart “Cytotoxicity of Luminescent Silicon Quantum Dots Engineered for Biological Applications” American Institute of Chemical Engineers Annual Conference. Philadelphia, PA, November 2008.
12. **Folarin Erogbogbo**, Ken-Tye Yong, Paras N. Prasad, Mark T. Swihart. “Luminescent, Biocompatible Silicon Quantum dots for Cancer Cell Imaging” American Institute of Chemical Engineers Annual Conference. San Francisco, CA, November 2007.
13. **Folarin Erogbogbo**, Mark T. Swihart. “Biocompatible Silicon Quantum dots for Pancreatic Cancer Cell Imaging” Alliance for Graduate Education and the Professoriate Colloquium, Buffalo, New York, October 2007.
14. **Folarin Erogbogbo**, Mark T. Swihart. “Biocompatible Silicon Quantum dots” National Science Foundation Integrative Graduate Education and Research Traineeship Conference. Arlington, VA, May 2007. (*Poster*)
15. **Folarin Erogbogbo**, Mark T. Swihart. “Photoluminescent Silicon Nanocrystals with Mixed Surface Functionalization for Biophotonics” Material Research Society Conference, Boston, MA, November 2006.

### GRANTS AND PATENT APPLICATIONS

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#### Funded

1. Theranostics Labs: Developing Silicon for theranostic applications (2010-2012)
2. Ford Fellowship: Developing Silicon Quantum Dots for MRI Imaging Applications. ( 2011-2012)

### Patent submission:

1. Folarin Erogbogbo, Krystal Lajoie, Mark. T Swihart, Paras N. Prasad. Method for Preparing Silicon Nanocapsules – Non technical disclosure to the UB’s office of science, technology transfer and economic outreach. July 2012.
2. Erogbogbo Folarin, Mark T. Swihart, Paras N. Prasad Silicon Nanotechnology for Enhanced and Rapid Hydrogen Generation at Room Temperature. *Provisional patent*
3. Erogbogbo Folarin, Yong Ken-Tye, Mark T. Swihart, Paras N. Prasad Luminescent Silicon Nanocrystals and Biophotonic Applications Thereof, reviewed by the University of Buffalo’s Office of Science, Technology Transfer and Economic Outreach (OSTTEO). May 2009. Due to university budget cuts and a decrease in patents funded, the OSTTEO recommended I pursue this patent application on my own. I declined and decided to publish the work myself.

## TEACHING EXPERIENCE

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### **Physiology for Engineers**, Fall 2013

Catalogue Description: Structure and function of physiological systems and discussion of topics of particular importance to the design, development, construction and clinical application of biomedical devices. Practical application of new technologies to monitor, repair, replace or augment those systems.

### **Heat Transfer for Electronics**, Fall 2013

Catalogue Description: Introduction to thermodynamics and heat transfer, including conduction, convection and radiation. An emphasis on applications for electronics; including heat transfer in computer components, heat sinks, liquid and air cooling and heat pipes.

### **Research Methods Instructor**, Summer, 2009-2013

-Designed and developed curriculum for science, technology, engineering and mathematics undergraduate students at the University at Buffalo, State University of New York

### **Co-instructor of Exploring Nanomaterials**, Fall 2007

-Responsible for exposing students to research technology like Scanning Electron Microscopes (SEM) and Small Angle X-ray Scattering (SAXS) equipment, explaining principles and demonstrating practical applications.

### **Instructor for pre-calculus**, Summer 2005-2010

-Responsible for development and implementation of summer curriculum for ‘Buffalo Engineering Awareness for Minorities’ (BEAM) students learning in a college-paced environment.

## EDUCATIONAL ACTIVITIES EXPERIENCE

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### **Workshop: Get the most out of your Research**

This workshop prepares students for multiple facets of the research experience. I have presented it six times; three times at the 2010, 2011, and 2012 statewide Collegiate Science and Technology Entry Program Conferences and three times for students at the University at Buffalo.

## **Workshop: Creating Award Winning Posters**

This workshop prepares students to create competitive poster presentations. I have presented it at the University at Buffalo for the Ronald E. McNair Scholars Program, the Collegiate Science and Technology Entry Program and the SUNY LS Amp program.

## **Multidisciplinary Mentoring**

I have mentored 40 undergraduate students. One of those students became a Goldwater scholar based on our research projects and another undergraduate has been nominated as a Goldwater Scholar. I also advised and designed experimental protocols for five graduate student theses and trained five other international researchers. These scholars were from different disciplines including Chemical and Biological Engineering, Pharmaceutical Sciences, Chemistry, and Biomedical Engineering and Sciences. Students I have mentored have gone on to pursue professional degrees.

## **Keynote Lectures**

I have given inspiring keynote lectures to diverse audiences at the National Ronald E. McNair Conference, a college-wide Collegiate Science and Technology Entry Program End of Year Celebration, McNair/Student Support Services Graduation Ceremony, and National Organization for the Professional Advancement of Black Chemists and Chemical Engineers.

## **Buffalo Engineering Awareness for Minorities (BEAM) Program**

I hosted local area high school students in the Chemical and Biological Engineering department as part of the BEAM program. As part of the program, they were required to finish science related tasks, such as operating fuel cell powered small cars and calculating the efficiency.

## **Collegiate Science and Technology Program 25<sup>th</sup> Anniversary Luncheon Host**

I hosted this event which involved fund raising and increasing public awareness of diversity efforts for a diverse population of current students and alumni at the University at Buffalo.

## **Poster Competitions**

I established a poster competition for students of diverse backgrounds and majors as part of the College Science and Technology and Entry Program (CSTEP). A part of this process involved coordinating with faculty members to enhance the quality of student research presentations. I have also participated as a poster competition judge for diverse students at the Annual Biomedical Research Conference for Minority Students and the statewide CSTEP Poster competitions.

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## AFFILIATION AND SERVICE

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### Reviewer for :

ACS Applied Materials and Interfaces  
Langmuir  
ChemComm  
Journal of nanoscience and nanotechnology  
Chemistry – A European Journal

### Professional organizations:

Member of the American Institute of Chemical Engineering (AIChE)  
Material Research Society (MRS),  
American Chemical Society (ACS)  
National Society of Black Engineers (NSBE) ( Executive board member)

Alliance for Graduate Education and the Professoriate  
Graduate Student Association ( Executive board member)

## Community and University Service :

Active participant in programs that specialize in hosting minority or economically disadvantaged high school and college students including :

The Buffalo Engineering Awareness for Minorities (BEAM) program (hosted engineering competitions that taught high school students about fuel cells.)

Collegiate Science and Technology Entry Program (served on over 10 different professional panels)

Student Support Services ( gave commencement Speech)

National Society of Black Engineers (acted as an advisor, and gave lectures)

Ronald E. McNair Scholars Program ( gave invited lectures, and served on multiple panels)

AGEP (served on 2 panels and gave 3 public lectures)

African Students Association ( gave keynote speech)

Participated in NYS Senator Gillibrands initiative to boost passion for the sciences by speaking about Engineering majors at Waterfront Academy Middle School.

Participated in “Brush up Buffalo’s” effort to empower low-income homeowners and revitalize Buffalo neighborhoods by painting houses.

Tutored students in organic chemistry, and chemical engineering based subject.

## HONORS AND AWARDS(LAST 5 YEARS ONLY)

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2012

Research Mentor of the Year (University at Buffalo)

Ford Foundation Postdoctoral Fellowship (2011-2012)

2011

Carl Storm Underrepresented Minority Fellowship

Collegiate Science and Technology Program Key Note Speech

Ronald E. McNair Scholars Program/ Student Support Services – Key Note Speech

African Students Association – Key Note Speech

2010

Annual Biomedical Research Conference for Minority Students (ABRCMS) Judges Travel Award

Research Mentor Award from the Collegiate Science and Technology Program (CSTEP)”

Ronald E. McNair Scholars Program – Honorary Award for Keynote speech on “Research Awareness”

NIGMS Workshop for Postdocs Transitioning to Independent Positions

2009

**1<sup>st</sup> Place** National Cancer Institute Alliance for Cancer in Nanotechnology Poster Competition Award

Ronald E. McNair Scholars Program – Honorary Award for Presentation titled “Why earn a Ph.D.”

CSTEP Outstanding Service and Commitment Award for tutoring, mentoring, research and teaching

**1<sup>st</sup> Place** Award in the School of Engineering and Applied Sciences Poster Competition at The University at Buffalo (SUNY)

2008

National Science Foundation Integrative Graduate Education and Traineeship Fellowship for Biophotonics(2004-2008)

**1<sup>st</sup> Place**, Outstanding Poster Presentation Award, Chemical and Biological Engineering Department, University at Buffalo, State University of New York

Essential Piece of the Puzzle **Research Mentor Award**, Cora P. Maloney College

2008

Chosen for State University of New York’s Future Faculty Workshop Program

2007

Travel Awards for the Southern Regional Board of Education’s Institute for Teaching and Mentoring Conference

Collegiate Science and Technology Entry Program (CSTEP) GEM awards for **Outstanding Alumni** 2007

**Judge** for Research Poster Presentation for the 14<sup>th</sup> and 15<sup>th</sup> Annual CSTEP Statewide Research Competition

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**FOREIGN STUDY AND COLLABORATION**

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**China:**

I assisted with non-human primate studies of nanoparticles at the Chinese Military Hospital during my visit to Beijing. I also gave an invited lecture at Capital Normal University in Beijing. **Collaboration Status: Ongoing**

**Nigeria:**

I visited Nigeria to build relations with the National University Commission to establish Nigerian American Nanotechnology Organization (NANO). The NANO is a program being developed to train Nigerian Scholars in America. I was part of the team that hosted them in Buffalo, and I presented talks that excited them about collaboration.

**Collaboration Status: Pending**

**South Africa:**

Developed MoU's for joint scientific projects, helped coordinate a researchers training program in our lab, and engaged South African leaders from CSIR, DST and Salene Technologies. **Collaboration Status: Ongoing**

**Zimbabwe:**

Engaged Professors from University of Zimbabwe (UZ) and provided input for establishment of nanotechnology program at UZ. **Collaboration Status: On going**

**New Zealand:**

I collaborate as a PI with a New Zealand Based Company called Theranostic Labs. The CEO, Dr. Patrick Gladding has sponsored some of my research and we have submitted 5 joint grants. **Collaboration Status: Ongoing**

Languages : Yoruba, English

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**INTEREST AND ACTIVITIES**

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Enjoy reading (autobiographies), music: have played hand drums for 15 years created digital music for 10 years. Strong family ties, I planned the first reunion for descendants of my great grandfather in his city of origin – Ikorodu, Nigeria.