

MARY JANE SIMPSON

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EDUCATION

OAK RIDGE NATIONAL LABORATORY 2014 – present

Post-doctoral associate

Laser Spectroscopy and Chemical Microtechnology Group

Description: built transient absorption microscope with an amplified laser system and optical parametric amplifier

DUKE UNIVERSITY 2009-2014

Ph.D. in Chemistry

Advisor: Warren S. Warren

Description: maintained and used homebuilt transient absorption multimodal (also fluorescence, second harmonic generation, and confocal) microscope to study nonlinear optical phenomena in biological systems

DUKE UNIVERSITY 2014

Certificate in College Teaching

STETSON UNIVERSITY 2006 – 2009

Bachelor of Science, Chemistry, *Cum Laude*

TEACHING

EXPERIENCE

Chemistry and Physics of Cooking Teaching Fellow 2013

I designed and taught a new freshman-level course as a team with an assistant professor, a chef, and another graduate student teaching fellow.

Chemistry Outreach Volunteer 2010 – 2013

Planned and performed demonstrations and activities to teach school-age children about optics. The topics included laser safety, collimated light, colors, manipulating light with lenses, mirrors and gratings, and coherence/interference.

General Chemistry Recitation Head Teaching Assistant 2010 – 2011

I came up with discussion topics to help students review topics that they struggled with on exams and on homework sets. My recitation sections were groups of 8-10 students. I wrote challenge problems and presented them to help students prepare for exams. I met with students outside of class on an individual basis. I also graded and proctored their exams.

Organic Chemistry Lab Teaching Assistant 2010

I led a short pre-lab discussion, then guided students through organic chemistry labs. I also graded their lab reports and exams.

General Chemistry Lab Teaching Assistant 2009

I led a short pre-lab discussion, then guided students through general chemistry labs. I also graded their lab reports and exams.

HONORS AND AWARDS	Kathleen Zielek Fellowship	2013
	Duke University Department of Chemistry	
	Poster Prize	2012
	Duke Center for <i>In Vivo</i> Microscopy Annual Meeting	
	Burroughs-Wellcome Fellowship	2012
	Duke University Department of Chemistry	
	Poster Prize in Melanins Category	2011
	International Pigment Cell Conference	
	IFPCS Travel Award to Conference in Bordeaux, France	2011
	International Federation of Pigment Cell Societies	
	1st Place Poster Presentation	2010
	Fitzpatrick Institute for Photonics Annual Meeting	
	Outstanding Senior Award	
	Stetson University Department of Chemistry	2009
	Undergraduate Award in Analytical Chemistry	
	American Chemical Society	2008
	Award for Achievement in Organic Chemistry	
	National Information Center for Polymer Education	2007

- PUBLICATIONS**
- M. J. Simpson**, B. Doughty, B. Yang, K. Xiao, Y. Z. Ma, “Spatial Localization of Excitons and Charge Carriers in Hybrid Perovskite Thin Films” *Journal of Physical Chemistry Letters*, **6**, 3041-3047 (2015).
- J. W. Wilson, S. Degan, C. S. Gainey, T. Mitropoulos, **M. J. Simpson**, J. Y. Zhang, W. S. Warren, “Comparing in vivo pump–probe and multiphoton fluorescence microscopy of melanoma and pigmented lesions” *Journal of Biomedical Optics*, **20** (5), 051012-051012 (2015).
- M. J. Simpson**, J. W. Wilson, F. E. Robles, C. P. Dall, K. Glass, J. D. Simon, W. S. Warren, “Near Infrared Excited State Dynamics of Melanins: the Effects of Iron Content, Photo-Damage, Chemical Oxidation, and Aggregate Size” *Journal of Physical Chemistry A*, **118** (6), 993-1003 (2014).
- M. J. Simpson**, K. E. Glass, J. W. Wilson, P. Wilby, J. D. Simon, W. S. Warren, “Pump-Probe Microscopic Imaging of Jurassic-Aged Eumelanin,” *Journal of Physical Chemistry Letters*, **4** (11), 1924-1927 (2013).
- M. J. Simpson**, J. W. Wilson, M. A. Phipps, F. E. Robles, M. A. Selim, W. S. Warren, “Nonlinear Microscopy of Eumelanin and Pheomelanin with Subcellular Resolution,” *Journal of Investigative Dermatology*, **133**, 1822-1826 (2013).

T. E. Matthews, J. W. Wilson, J. Y. Zhang, **M. J. Simpson**, J. Y. Jin, W. S. Warren, "In vivo and ex vivo epi-mode pump-probe imaging of melanin and microvasculature," *Biomedical Optics Express*, **2**, 1576-1583 (2011).

T. E. Matthews, I. R. Piletic, M. A. Selim, **M. J. Simpson**, W. S. Warren, "Pump-probe imaging differentiates melanoma from melanocytic nevi," *Science Translational Medicine*, **3**, 71ra15 (2011).

***SELECT
PRESENTATIONS***

"Investigating the Metastatic Potential and Pigment Chemistry of Melanomas Using Pump-Probe Imaging"

Invited Oral Presentation

Photonics West, San Francisco, CA, USA

2 February 2013

"Investigating the Metastatic Potential and Pigment Chemistry of Melanomas Using Pump-Probe Imaging"

Featured Poster Presentation

Fitzpatrick Institute for Photonics Breakfast, Durham, NC, USA

9 November 2012

"Pump-Probe Imaging of Melanin Identifies Metastatic Potential of Melanoma"

Oral Presentation

Frontiers in Optics and Laser Science, Rochester, NY, USA

16 October 2012

"Imaging the Distribution of Melanin in Human Skin Lesions with Pump-Probe Microscopy"

Oral Presentation

Frontiers in Optics and Laser Science, San Jose, CA, USA

17 October 2011

"Imaging the Distributions of Eumelanin and Pheomelanin in Human Tissue"

Poster Presentation

International Pigment Cell Conference, Bordeaux, FR

21 September 2011

"Beyond Pathology: Pump-Probe Imaging of Skin Slices Provides Additional Indicators of Melanoma"

Oral Presentation

Novel Techniques in Microscopy, Monterey, CA, USA

4 April 2011

***PROFESSIONAL
MEMBERSHIPS***

**American Chemical Society
American Physical Society**

**2009 –
2011 – 2013**