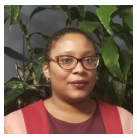

J. Bianca Jackson

Monday July 22, 2019, by admin-STEM

2009 Chateaubriand STEM Fellow
University of Michigan, Ann Arbor - ENSTA- Ecole Polytechnique
Applied Physics

J. Bianca Jackson earned her PhD from the University of Michigan at Ann Arbor, and she was a Chateaubriand fellow in 2009 at the Laboratoire des Optiques Appliquées, ENSTA-Ecole Polytechnique for 8 months (4 years total).

In which field did you carry out your research for your PhD and what was your specific area of study?
My degree is in applied physics, and my specific area of study was terahertz nondestructive evaluation.

What is your current occupation?
I am an advanced optics engineer in the aerospace and defense industry.

Please give a brief description of the work you completed in France:
While I was in France, I worked on developing applications of nondestructive, non-invasive terahertz imaging and spectroscopy for the study of cultural heritage artifacts with Prof. Gerard Mourou. While on the Chateaubriand fellowship, I was able to conduct preliminary experiments that allowed my host to obtain funding for a more extensive research program. While under the fellowship, I examined specimen from the oldest Neolithic human settlement, Catalhoyuk, and studied various historical pigments. I returned to France after my US component was complete, and was given the authority to develop a terahertz research facility at the Centre de la Recherche et de la Restauration des Musées de France (C2RMF).

How was your experience as a researcher in France?
I enjoyed my research immensely, and had many opportunities to collaborate and present my work both in France and around Europe.

Comments on your experience as a researcher in France and conditions in your host lab:
This Chateaubriand fellowship was invaluable to me, because there was very little initial funding for our project. I would not have been able to afford to move to France, evolve

Did or will your research in France lead to any co-publications?
Yes

If yes, please describe (name of journal, date of publication):
The following list includes all of my publications and co-publications based on the research I conducted while I was in France (inclusive of my fellowship period):

• J. B. Jackson, J. Labaune, R. Bailleul-Lesuer, L. D'Alessandro, A. Whyte, J. W. Bowen, M. Menu, and G. Mourou, "Terahertz pulse imaging in archaeology," Frontiers of Optoelectronics, 8 (2014) 81–92 (Special issue: Terahertz Wave Science, Technology, and Application)
• J. Bianca Jackson, John Bowen, Gillian Walker, Julien Labaune, Gerard Mourou, Michel Menu and Kaori

Fukunaga, “A Survey of Terahertz Applications in Cultural Heritage Conservation Science,” IEEE Transactions on Terahertz Science and Technology 1 (2011) 220-231 (inaugural issue, invited review)
• J.B. Jackson, M. Mourou, J. Labaune, J.F. Whitaker, I.N. Duling III, S.L. Williamson, C. Lavier, M. Menu and G.A. Mourou, “Terahertz Pulse Imaging for Tree-Ring Analysis: a Preliminary Study for Dendrochronology Applications” Measurement Science & Technology 20 (2009) 075502+10. (included in the IOP Select collection of articles)
• A. S. Skryl, J. B. Jackson, M. I. Bakunov, M. Menu, and G. A. Mourou, “Terahertz time-domain imaging of hidden defects in wooden artworks: application to a Russian icon painting,” Applied Optics 53 (2014) 1033-1038. (selected for republication in the OSA’s Virtual Journal of Biomedical Optics 9:4 (2014)
• G. C. Walker, J. W. Bowen, W. Matthews, S. Roychowdhury, J. Labaune, G. Mourou, M. Menu, I. Hodder, and J. B. Jackson, “Sub-surface terahertz imaging through uneven surfaces: visualizing Neolithic wall paintings in Çatalhöyük.,” Optics Express 21 (2013) 8126–34
• G. C. Walker, J. W. Bowen, J. Labaune, J. B. Jackson, S. Hadjiloucas, J. Roberts, G. Mourou, and M. Menu, “Terahertz deconvolution.,” Optics Express 20 (2012) 27230–41
• Julien Labaune, J. Bianca Jackson, Kaori Fukunaga, Jeffrey White, Laura d’Alessandro, Alison Whyte, Michel Menu and Gerard Mourou, “Investigation of Clay Artefacts with Terahertz,” Applied Physics A: Materials Science and Processing 105 (2011) 5-9
• J. Labaune, J.B. Jackson, S. Pagès-Camagna, I.N. Duling, M. Menu and G.A. Mourou, “Papyrus Imaging with Terahertz Time Domain Spectroscopy,” Applied Physics A: Materials Science & Processing 100 (2010) 607–612

Did you or one of your supervisors present your work at a seminar? Do you plan on doing so?
Yes

If yes, please describe (name of seminar, date, type of presentation):
The following list includes all of the oral presentations I have personally given based on the research I conducted while I was in France (inclusive of my fellowship period):

• “TISCH: Terahertz Imaging and Spectroscopy for Cultural Heritage,” OSA Optical Sensors Meeting, July 2016, Vancouver, Canada
• “TISCH: Terahertz Imaging & Spectroscopy for Cultural Heritage,” oral presentation at the 50th anniversary of the International Council on monuments and sites (ICOMOS) Seminar “Innovative technologies for heritage preservation,” December 2015, Riga, Latvia
• "TISCH: Terahertz Imaging & Spectroscopy for Cultural Heritage,” oral presentation at the Physical Sciences, Engineering and Computing Research Centre Seminar Series at Nottingham Trent University, October 2015, Nottingham, UK
• “Cyclododecane as a Reversible Contrast Enhancer for the Terahertz Imaging of Frescos," 2015 40th International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz), August 2015, Hong Kong, China
• “TISCH: Terahertz Imaging & Spectroscopy for Cultural Heritage,” Women in Optics: The Castle Meeting, Schloss Rauischholzhausen, August 2015, Ebsdorfergrund, Germany
• “TISCH: Terahertz Imaging & Spectroscopy for Cultural Heritage,” The Victoria & Albert Museum, July 2015, London, UK
• “Cyclododecane as a Reversible Contrast Enhancer for the Terahertz Imaging of Frescoes,” in Conference on Subliming Surfaces: Volatile Binding Media in Heritage Conservation, April 2015, Cambridge, UK
• “TISCH: Terahertz Imaging & Spectroscopy for Cultural Heritage,” Teranet Meeting, University of Leeds, January 2015, Leeds, UK
• “Cyclododecane As a Contrast Enhancing Agent for the Terahertz Imaging of Artworks” 1st International THz-Arte Workshop, ENEA-Frascati, Frascati, Italy, December 2014
• “TISCH: Terahertz Imaging & Spectroscopy for Cultural Heritage,” Science & the Past Program for IUCA-Universidad de Zaragoza, November 2014, Zaragoza, Spain
• “Terahertz Time Domain Imaging and Spectroscopy for Cultural Heritage Conservation Science” Gordon Research Conference on Scientific Methods in Cultural Heritage Research, August 2014, Mount Snow, USA

• "Terahertz imaging and spectroscopy for cultural heritage conservation." 245th American Chemical Society National Meeting, New Orleans, USA, April 2013
• “Challenges Facing Terahertz Pulsed Reflectometry of Historical Architecture,” 3rd European Optical Society Topical Meeting on Terahertz Science & Technology, June 2012, Prague, Czech Republic
• “High Average Power Lasers to Produce THz for Archeology,” oral presentation for ICAN Workshop 2 &3 - Driver & System for Peak Power Scaling, Friedrich Schiller Universität, June 2012, Jena, Germany
• “Terahertz Pulse Imaging of Egyptian and Near Eastern Artifacts,” Advanced Electromagnetics Symposium, April 2012, Paris, France
• “Issues with Surface and Sub-Surface Measurements in the Terahertz Pulse Imaging of Heritage Objects,” 3rd International Conference on Surface Metrology, March 2012, Annency, France,
• “Terahertz Imaging and Spectroscopy for Cultural Heritage” SPIE Special Lecture at The University of Nizhny Novgorod, February 2012, Nizhny Novgorod, Russia
• “Terahertz pulse imaging of stratified architectural materials for cultural heritage studies,” SPIE Europe International Symposium on Optical Metrology – O3A: Optics for Arts, Architecture, and Archaeology, June 2011, Munich, Germany
• “Pulsed Terahertz Investigation of Corroded and Mineralized Copper Alloy Historical Artifacts,” 36th International Conference on Infrared, Millimeter, and Terahertz Waves, October 2011, Houston, USA
• “Nondestructive Terahertz Pulse Imaging for Cultural Heritage Conservation: A Survey,” Proceedings of the European Optical Society Annual Meeting 2010 TOM 2 – Terahertz Science and Technology, October 2010, Paris, France
• “Portable Terahertz Pulse Imaging for Archaeology and Art Conservation,” In Situ Technical Imaging for Art and Archaeology: A Symposium in Conservation Science, Andrew W. Mellon Symposium at the British Museum, July 2010, London, UK

In your opinion, did the Chateaubriand Program contribute to closer ties between your US and French labs (why or why not)?
Absolutely! I would not have been able further my research had I not obtained the Chateaubriand Fellowship. After I left France, I received a 2 year Marie Curie IntraEuropean Fellowship in the UK at a lab of a professor I met while I was part of the Chateaubriand Program. We continued to collaborate with others that I worked with while in France.

Did you improve your French while in France?
Un petit peu.

Do you plan on returning to France in the future?
I don’t not have any immediate plans to return to France, but I am always open to if possible.

Did you participate in any extracurricular activities or travel while in France?
Yes, I traveled a great deal throughout France and Europe, particularly to collaborate with others or present my work.