Brenda A. Smith

Cell Phone: (865) 712-2712; Office Phone: (865) 576-5096; Email: douganba@ornl.gov

RESEARCH EXPERIENCE

Oak Ridge National Laboratory, Oak Ridge, TN, USA

Nanophosphor Synthetic Chemist (Research Staff) December 2012 – present

- Develop highly luminescent phosphors emitting in the ultraviolet (UV) to short-wavelength infrared region that exhibit long after-glow decay rates and/or can be solar activated.
- Design novel UV and near-infrared powder-based scintillating materials as a wide-area assessment sensor for alpha, beta, gamma, and neutron radiation contamination.
- Material preparation experience in sol-gel and aerogel chemistry, combustion synthesis, spray pyrolysis, precipitation, hydrothermal, and solid-state techniques.
- DOE Radiological Worker II experience.
- Work has led to two public releases, one ORNL report, and 2 unclassified & 12 classified invention disclosures.
- Mentor undergraduate students (1 student in Fall 2014, 2 students in Spring 2015, 3 students in Summer 2015, 1 student in Fall 2015 and Spring 2016).
- Write scientific reports and research proposals.

Oak Ridge National Laboratory, Oak Ridge, TN, USA

Intelligence Community Post–doctoral Research Fellow March 2010 – Dec. 2012

- Developed metalized dielectric aerogel materials for a wide-array of applications.
- Designed photoluminescent and radioluminescent powder-based materials.
- Work resulted in one patent application.
- Gained instrumental experience.

EDUCATION, TRAINING, AND SECURITY CLEARANCE

Doctor of Philosophy in Chemistry, with Specialization in Physical Inorganic Chemistry
University of Tennessee, Knoxville, TN, USA Graduation Date: Dec. 2009

Bachelor of Science in Chemistry (ACS certified)
Kent State University, Kent, OH, USA Graduation Date: May 2005

Department of Energy Radiological I and II Training 2013 – present

Department of Energy Q Security Clearance 2011 – present

PUBLICATIONS

Journals

- Glasgow, D. C.; Lewis, L. A.; Smith, B. A.; Moyers, R. L.; Thompson, C. V.; Montgomery, F. C. *Oak Ridge National Laboratory Report* **2015,i** *Pub ID: 44859.*

- Hunter, S. C.; Smith, B. A.; Hoffmann, C. M.; Wang, X.; Chen, Y-S.; McIntyre, G. J.; Xue, Z. L. *Inorganic Chemistry* **2014**, *53*, 11552-62.
- Chen, P.; Dougan, B. A.; Zhang, X.; Y. D.; Wu, Y. D.; Xue, Z. L. *Polyhedron* **2013**, *58*, 30-38.
- Chen, S.; Dougan, B. A.; Chen X.; Xue, Z. L. *Organometallics* **2012**, *31*, 3443.
- Dougan, B. A.; Xue, Z. L. *Sci. China Chem*. **2011**, *54*, 1903.
- Chen, S.; Li, J.; Dougan, B.; Steren, C.; Wang, X.; Chen, X.; Lin, Z.; Xue, Z. *Chemical Communications* **2011**, *47*, 8685.
- Sun, J. F.; Chen, F.; Dougan, B. A.; Xu, H. J.; Cheng, Y.; Li, Y. Z.; Chen, X. T.; Xue, Z. L. *Journal of Organometallic Chemistry* **2009**, *694*, 2096.
- Dougan, B. A.; Xue, Z. L. *Organometallics* **2009**, *28*, 1295.
- Dougan, B. A.; Xue, Z. L. *Sci. China Chem*. **2009**, *52*, 2083.
- Fry, F. H.; Dougan, B. A.; McCann, N.; Willis, A. C.; Ziegler, C. J.; Brasch, N. E. *Inorganica Chimica Acta* **2008**, *361*, 2321.
- Xu, H. J.; Cheng, Y.; Sun, J. F.; Dougan, B. A.; Li, Y. Z.; Chen, X. T.; Xue, Z. L. *Journal of Organometallic Chemistry* **2008**, *693*, 3851.
- Mukherjee, R.; Dougan, B. A.; Fry, F. H.; Bunge, S. D.; Ziegler, C. J.; Brasch, N. E. *Inorganic Chemistry* **2007**, *46*, 1575.
- Fry, F. H.; Dougan, B. A.; McCann, N.; Ziegler, C. J.; Brasch, N. E. *Inorganic Chemistry* **2005**, *44*, 5197.

Patent Application and Invention Disclosures

- Lewis, L. A.; Smith, B. A.; Connatser, R. M.; Lewis, S. A. (Oak Ridge National Laboratory, USA). Compositions and methods of use for detection and imaging of prints by surface-enhanced spectroscopic techniques. U.S. Serial No. 13/602,758. ORNL Reference: 2473.
- Hun, D.; Smith, B. A.; Lewis, L. A. (Oak Ridge National Laboratory, USA). Fluorescent Air Leakage Detection System for Building Enclosures. ID: 201603626, DOE S-138,265.
- Smith, B. A.; Plymill, A. (Oak Ridge National Laboratory, USA). Development of Magnetic-Luminescent Fe_3O_4@ $La_{1-x}PO_4$: x Ln Nanocomposites. ID: 201503564, DOE S-138,200.
- 12 classified invention disclosures submitted on the development and application of 11 novel infrared scintillating materials including three of which that have tunable wavelengths by adjusting the core matrix host composition.

Public Releases

- Glasgow, D. C.; Lewis, L. A.; Smith, B. A.; Moyers, R. L.; Thompson, C. V.; Montgomery, F. C. "New EM Technology: Spray Lights up Contamination Hot Spots." DOE public release. 2013. http://energy.gov/em/articles/new-em-technology-spray-lights-contamination-hot-spots
- Glasgow, D. C.; Lewis, L. A.; Smith, B. A.; Moyers, R. L.; Thompson, C. V. "Oak Ridge National Laboratory Scintillator Can Detect 35 Microcurie Beta Emissions in Daylight at 15 Feet." DTRA public release. 2014. http://www.dtra.mil/Research/BasicandAppliedScienceDepartment/SciencetoSecureWMD/TA52.aspx

Book Chapter

- Abbott, J. K. C; Dougan, B. A.; Xue, Z. L. *Synthesis of Organometallic Compounds, Modern Inorganic Synthetic Chemistry,* 1st ed.; Elsevier, 2011; pp. 269-293.