

LEAH BECK CASABIANCA
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EDUCATION

Georgetown University Washington, DC
Ph. D. in Physical Chemistry, 2008. Thesis Title: "Understanding the Mechanism of Action of Antimalarial Drugs: Insights from Solution NMR"
Advisor: Prof. Angel C. de Dios, Ph. D.

Rice University Houston, TX
Bachelor of Science in Chemistry, *Magna Cum Laude*, 2002.

RESEARCH INTERESTS

My research interests include using *ab initio* chemical shift calculations and experimental solution and solid-state NMR to study biological systems and materials. Current and recent projects include structural studies of graphite oxide using solid-state NMR and chemical shift calculations, characterizing the interactions between small molecules and the Alzheimer's beta peptide, chemical shift calculations of paramagnetic polymorphs, use of calculated chemical shift tensor components in quantitative structure-activity relationships, and using an arsenal of solution NMR techniques including magnetic susceptibility measurements, pulsed gradient experiments to measure diffusion coefficients, and measurement of paramagnetic relaxation effects to examine the mechanism by which antimalarial drugs prevent the formation of hemozoin in the digestive vacuole of the parasite.

HONORS/AWARDS

Achievement Rewards for College Scientists (ARCS) Fellowship (2006-2008)
Clare Boothe Luce Fellowship (2004-2006)
Experimental NMR Conference (ENC) Student Travel Award (2004 and 2005)
Espensheid Fellowship, Georgetown University (2003)
Phi Beta Kappa, Rice University (2002)
Phi Lambda Upsilon National Honorary Chemical Society (Inducted 2002)
2002 Student Awardee of the American Institute of Chemists Foundation (AICF)
Pitzer Undergraduate Fellowship (2001)
National Society of Collegiate Scholars (Inducted 2000)
Golden Key National Honor Society (Inducted 2000)
President's Honor Roll, Rice University (Fall 1999, Spring 2000, Fall 2000, Spring 2002)
National Merit Scholarship (1999)
Semifinalist, Intel Science Talent Search (1999)

EXPERIENCE

Postdoctoral Research Assistant, University of Illinois at Chicago, June 2008-present.
Advisor: Prof. Yoshitaka Ishii, Ph. D.
Teaching Assistant, Freshman Chemistry. Georgetown University. 2003-2004.
Teacher, United States Peace Corps Cameroon. 2002- 2003.
Recitation Leader and Teaching Assistant, Organic Chemistry. Rice University. 2001-2002.
Undergraduate Research, Rice University. 1999-2001.

PUBLICATIONS

"Antimalarial Drugs and Heme in Detergent Micelles: An NMR Study" L. B. Casabianca, J. B. Kallgren, J. K. Natarajan, J. N. Alumasa, P. D. Roepe, C. Wolf, and A. C. de Dios, *J. Inorg. Biochem.* **2009**, *in press*.

"Quinine and Chloroquine Differently Perturb Heme Monomer-Dimer Equilibrium" L. B. Casabianca, D. An, J. K. Natarajan, J. Alumasa, P. D. Roepe, C. Wolf and A. C. de Dios, *Inorg. Chem.* **2008**, *47*, 6077-6081.

"4-N, 4-S & 4-O Chloroquine Analogues: Influence of Side Chain Length and Quinolyl Nitrogen pKa on Activity vs. Chloroquine Resistant Malaria" J. K. Natarajan, J. Alumasa, K. Yearick, K. Ekoue-Kovi, L. B. Casabianca, A. C. de Dios, C. Wolf and P. D. Roepe, *J. Med. Chem.* **2008**, *51*, 3466-3479.

"Ab Initio Calculations of NMR Chemical Shifts" L. B. Casabianca and A. C. de Dios, *J. Chem. Phys.* **2008**, *128*, 052201.

"Progress in ^{13}C and ^1H Solid State Nuclear Magnetic Resonance for Paramagnetic Systems under Very Fast Magic Angle Spinning" N. P. Wickramasinghe, M. A. Shaibat, C. R. Jones, L. B. Casabianca, A. C. de Dios, J. S. Harwood and Y. Ishii, *J. Chem. Phys.* **2008**, *128*, 052210.

"Characterization of Polymorphs and Solid-State Reactions for Paramagnetic Systems by ^{13}C Solid-State NMR and ab Initio Calculations" M. A. Shaibat, L. B. Casabianca, N. P. Wickramasinghe, S. Guggenheim, A.C. de Dios and Y. Ishii, *J. Am. Chem. Soc.* **2007**, *129*, 10968-10969.

"Synthesis, larvicidal, QSAR and structural studies of some triorganotin 2,2,3,3-tetramethylcyclopropanecarboxylates" X. Song, A. Zapata, J. Hoerner, A. C. de Dios, L. Casabianca and G. Eng, *Appl. Organometal. Chem.* **2007**, *21*, 545-550.

"Synthesis, Structural and Larvicidal Studies of Some Triorganotin 2-(p-chlorophenyl)-3-methylbutyrates" G. Eng, X. Song, A. Zapata, A. C. de Dios, L. Casabianca and R. D. Pike, *J. Organometallic Chem.* **2007**, *692*, 1398-1404.

"Relationship Between NMR Shielding and Heme Binding Strength for a Series of 7-substituted Quinolines." L. B. Casabianca and A. C. de Dios, *J. Phys. Chem. A* **2006**, *110*, 7787-7792.

"Interactions Between Pairs of Antimalarial Drugs Studied by Experimental and Ab initio ^{13}C NMR Chemical Shifts" L. B. Casabianca and A. C. de Dios, *Mag. Reson. Chem.* **2006**, *44*, 276-282.

"Carbon Chemical Shift Tensor Components in Quinolines and Quinoline N-Oxides" L. B. Casabianca, C. M. Faller and A. C. de Dios, *J. Phys. Chem. A* **2006**, *110*, 234-240.

"Structure of the Amodiaquine-FPIX μ oxo Dimer Solution Complex at Atomic Resolution" A. C. de Dios, L. B. Casabianca, A. D. Kosar and P. D. Roepe, *Inorg. Chem.* **2004**, *43*, 8078-8084.

" ^{13}C NMR Study of the Self-Association of Chloroquine, Amodiaquine, and Quinine" L. B. Casabianca and A. C. de Dios, *J. Phys. Chem. A* **2004**, *108*, 8505-8513.

CONFERENCE PRESENTATIONS

November 2008. St. Louis, MO, Chicago Area NMR Discussion Group, "Structural Studies of Graphite Oxide Using Solid-State NMR and *Ab Initio* Chemical Shift Calculations" L. B. Casabianca, Medhat A. Shaibat, and Yoshitaka Ishii.

October 2008. Windsor, Ontario, Canada, 21st MOOT NMR Symposium, "Structural Studies of Graphite Oxide and Paramagnetic Polymorphs using Solid-State NMR and *Ab Initio* Chemical Shift Calculations" L. B. Casabianca, Medhat A. Shaibat, Angel C. de Dios, and Yoshitaka Ishii.

POSTERS

April 2006. Asilomar, CA, 47th Experimental NMR Conference, "Carbon Chemical Shift Tensors and π -Electron Density in Antimalarial Drugs and Related Quinolines" L. B. Casabianca and A. C. de Dios.

April 2005. Providence, RI, 46th Experimental NMR Conference, "¹³C NMR Studies of the Interactions Between Antimalarial Drugs" L. B. Casabianca and A. C. de Dios.

April 2004. Asilomar, CA, 45th Experimental NMR Conference, "Structure of the Amodiaquine-FPIX μ -oxo Dimer Solution Complex at Atomic Resolution" L. B. Casabianca, A. C. de Dios, A. D. Kosar and P. D. Roepe.