Nathan C. George

Ph.D. Chemical Engineering
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Mission

Improve humanity's quality of life by developing new technology and improving existing technology; educating the public in the fields of science, technology, and health.

Work experience:

8/2015-present Freelance entrepreneur, developing LED lighting, hydroponic, lighter-than-air airship, and farm automation technologies. Contract tutorial writing for SparkFun electronics (Particle Photon farm automation).

7/2014-8/2015 Device Process Engineer at NuvoSun, responsible for upkeep, running, and improving the sputtering processes for manufacturing CIGS solar cells. Big data analysis and correlation to experimental conditions (using python and JMP), automation through programming, machine vision, and building software/hardware improvements for the manufacturing line. **Managers**: Don Person, Art Wall

10/2011-11/2011 Visiting researcher at the PMC lab, École Polytechnique, Palaiseau, France, with Géraldine Dantelle and Thierry Gacoin. Worked on phosphor nanoparticle synthesis.

9/2008-6/2009 Undergraduate Researcher, National Renewable Energy Laboratory, Golden, CO. Assisted with research concerning water vapor transport and mechanical properties of transparent conductive oxide (TCO) layers for use in flexible electronics. Also fabricated thin-film TCO samples for testing and analysis using a high-vacuum apparatus. **Mentors**: Lin Simpson and Arrelaine Dameron.

9/2007-9/2008 Undergraduate Researcher, Colorado School of Mines, Golden, CO. Assisted with research of inter-particle adhesion forces of hydrate particles in order to better understand plugging and flow behavior of oil and gas pipelines. **Mentors**: Dendy Sloan and Carolyn Koh.

Education:

2009–2013 Ph.D. Chemical Engineering, Dept. of Chemical Engineering, UCSB. Thesis: *Correlating long-range order and local structure to the properties of inorganic solids*. Synthesized phosphor materials and studied their structure-property relations *via* advanced characterization methods. **Advisors**: Prof. Brad Chemlka and Prof. Ram Seshadri. (G.P.A. 3.78/4.0)

2005–2009 B.S. Chemical Engineering, Dept. of Chemical and Biological Engineering, Colorado School of Mines, Golden, CO. (G.P.A. 3.956/4.0)

Awards and recognitions:

NSF GRF Honorable Mention, **2011**; IGERT Fellowship, **2010**; Barry M. Goldwater Scholarship, **2008**; Tau Beta Pi Engineering Honor Society, **2007**

Skills (1 = beginner, 5 = expert)

Software/coding: Particle Photon MCU (5), Python(5), MS Office(5), Lua/ESP-8266(5), LaTeX(5), HTML(5), Electronic/Mechanical Prototyping (4), Linux/Unix/Bash(4), JMP(3), C#/C++(3), MATLAB(3), Android Studio (3), JavaScript(3), Mathematica(2), Visual Basic(2), SolidWorks(2)

Manufacturing: High-temperature ceramics (5), Sputtering(4), machine vision(4), high vacuum semiconductor fabrication(4), PVD(3)

Scientific analysis: high-temperature solid-state and solution-based materials preparation(5), solid-state NMR(5), Rietveld refinement of X-ray/neutron diffraction(5), total neutron scattering (PDF) and reverse Monte Carlo simulations of PDFs(4), photoluminescence(4), quantum yield(4), XANES/EXAFS(4), ESR(4), SEM(2)

Oral presentations

AICHE conference, San Francisco (November 2013)

Materials Research Outreach Program, UCSB (February 2013)

IGERT winter symposium, UCSB (February 2012).

Institute of Chemistry of Picardy, Amiens, France (November 2011).

The 9th International Meeting of Pacific Rim Ceramic Societies, Cairns, Queensland, Australia (July 2011).

North American Solid-State Chemistry Conference, McMaster University, Ontario, Canada (June 2011).

Poster presentations

Materials Research Outreach Program, UCSB (February 2011, 2012, 2013).

Gordon Conference for Solid State Chemistry, New London, NH (July 2012).

International Workshop on Materials, Ras Al Khaimah Center for Advanced Materials, UAE (February 2011).

Materials Research Society Fall Meeting, Boston, Massachusetts (November 2010).

Mentoring

Nick DeCino (2013), Lucie Devys and José Carvalho (fall 2012), Courtney Doll (summer 2011), Lucy Darago (2010-2011), Adam Jaffe and Rory Barker (summer 2010)

Educational outreach

High school: *Structure-property relations in carbon: Buckyballs, graphite, and diamond*

Middle/Elementary school: *Build a Solar Car*, *It's a Material World*, *Science Day at the Santa Barbara Zoo*

Publications

(for a complete list please see slideshare.net/NathanGeorge/publist-47053185)

16. J. R. Neilson, N. C. George, M. M. Murr, R. Seshadri, and D. E. Morse, Mesostructure from hydration gradients in demosponge biosilica, *Chem. Eur. J.* **20** (2014) 49564965. [**doi**]