

Brian Neltner

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1. Education

- **Massachusetts Institute of Technology**, Cambridge, MA
 - Doctor of Philosophy in **Materials Science and Engineering**, May 2010 (MIT)
 - Dual baccalaureate degree in **Materials Science and Physics**, May 2005 (MIT)
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2. Work Experience

- **Navolta (formerly Microreactor Solutions), Founder and CEO, January 2011 – present**
At Navolta, my work is to identify opportunities where our core strengths fit well. After a period of searching, we identified supercritical fluid deposition of thin coatings on conductive pigments as a key opportunity in the solar PV industry. In 2014, I was the PI on an NSF Phase I STTR grant as well as a MassCEC Catalyst Award, resulting in copper flake capable of withstanding temperatures over 500°C, one awarded patent, and one new patent application. In the course of this work, I have designed and built chemical reactors, talked with potential partners, made sales, and built a team of advisers to move forward based in the **North Shore InnoVentures** incubator.
- **Ambri, Principal Engineer, October 2011 – April 2013**
At Ambri, I worked as a systems and instrumentation engineer to support development of novel liquid metal batteries. While at Ambri, I coordinated a team to construct test equipment, worked on battery mechanical design, and developed new materials related technologies resulting in a patent application.
- **Independent Consultant, June 2005 – present**
As an independent consultant, I have worked to find projects where my unusual expertise in many different fields can be used to support systems development efforts. I significantly contributed to the development of flow cells, high speed AFM, chemical reactor controls, LED-based spectrum generators, TCS brain stimulators, and UV curing systems.
- **Weimer Lab, Postdoctoral Researcher, University of Colorado, May 2010 – August 2011**
At CU Boulder, I worked to support graduate and undergraduate students in understanding the materials science and catalytic possibilities provided by atomic layer deposition of high dispersion particles onto high surface area supports. My personal focus was a collaboration with NREL to produce catalysts for upgrading pyrolysis oils, as well as to investigate the phase stabilization of titanium oxide.
- **Belcher Lab, Graduate Researcher, MIT, June 2005 – May 2010**
In my graduate studies at MIT, I identified the possibility of using a genetically modified M13 bacteriophage to template catalytic materials. Catalysts are a great target for advanced processes because the catalyst cost is completely swamped by even a small improvement in yield. I developed new catalysts and built a reactor test bed to prove that I could reform ethanol into hydrogen gas with low cost nickel substituted for rhodium, with very high performance and stability. This technology was awarded a patent, and is currently being commercialized by **Siluria** to produce chemicals from natural gas.
- **Stellacci Lab, Undergraduate Researcher, MIT, January 2004 – June 2005**
As an undergraduate researcher, I developed a project to use DNA to create complex, self-assembled structures out of gold nanoparticles. I also did extensive work with MATLAB to prove that we could produce statistically significant levels of self-assembled linear nanostructures.
- **Jacobson Lab, Undergraduate Researcher, MIT, November 2001 – 2003**
As a freshman and sophomore, I supported development of equipment and processes to fabricate micro-electromechanical systems using microcontact printing of gold nanoparticles via liquid embossing.

3. Publication List

- Neltner BT, et al. “Production of Hydrogen Using Nanocrystalline Protein-Templated Catalysts on M13 Phage” ACS Nano 4(6), pp 3227-3235 (1st Author)
 - Zhou, Y, et al. “Growth of Pt Particles on the Anatase TiO₂ (101) Surface” Journal of Physical Chemistry C 116(22), pp. 12114–12123 (3rd Author)
 - Gould, TD, et al. “Synthesis of supported Ni catalysts by atomic layer deposition” Journal of Catalysis 303, pp. 9–15 (3rd Author)
 - DeVries GA, et al. “Divalent metal nanoparticles” Science 315(5810), pp. 358-361 (6th Author)
 - Wilhelm EJ, et al. “Nanoparticle-based microelectromechanical systems fabricated on plastic” Applied Physics Letters 85(26), pp. 6424-6426 (2nd Author)
 - “Hybrid bio-templated catalysts”, Ph.D. Dissertation
 - “Biotemplated Inorganic Catalysts”, US Patent Number 8,431,506
 - “System and Method for a Microreactor”, US Patent Number 8,875,981
 - “Supercritical Deposition of Protective Films on Electrically Conductive Particles”, US Application Number 14/265,678
 - “Seals for High Temperature, Reactive Metal Devices”, US Application Number 61/891,789
 - “Seals for High Temperature, Reactive Metal Devices”, US Application Number 61/891,784
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4. Activities and Recognitions

- **Instructor** and **Captain** of the MIT Shotokan Karate Club.
- **Board Member** of the Tau Epsilon Phi Board of Directors from 2011-2013.
- **Vice President** of the TEP Foundation, Inc, an educational non-profit.
- **President** of the Club Sports’ Council for 3 years.
- **President and Recruitment Chair** of Tau Epsilon Phi Fraternity for multiple terms each.
- **Varsity Rower**, MIT Heavyweight Team
- **Eagle Scout** and **Vigil Honor** in the Boy Scouts of America.
- **Founder** of the SaikoLED Project to produce open-hardware and open-software LED lighting.