

Exponent®
Engineering & Scientific Consulting

Aidin Fathalizadeh, Ph.D.

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Professional Profile

Dr. Fathalizadeh is an applied physicist whose expertise spans the fields of physics, materials science, and electrical sciences. He has considerable experience in the failure analysis of consumer electronics at the system, device, board and component level.

Dr. Fathalizadeh's work focuses on fire and thermal investigations, including those involving large body structures, vehicles, consumer electronics, and batteries. He also investigates the human interaction with and safety of electronic products, and has led internationally based research efforts towards these ends. He has an extensive background in electrical and materials characterization as well as materials synthesis, lithographic fabrication, optical characterization techniques, and electron microscopy.

Prior to joining Exponent, Dr. Fathalizadeh completed his Ph.D. in physics at the University of California, Berkeley under faculty advisor Alex Zettl. As a graduate student, his research in the field of solid-state physics broadly focused on the synthesis, characterization, and application of carbon and boron nitride based nanomaterials. In one of his main efforts, he led a team on the design, building, testing, and successful implementation of a novel synthesis process that involves the feeding of precursor material into an inductively coupled RF thermal plasma capable of operation at above atmospheric pressure. It was the first inductively coupled plasma capable of operation at hyperbaric pressures. This system was able to produce high quality nanotubes of boron nitride at record yields, several hundred times greater than what was previously achievable. The method was patented and this novel system received a R & D 100 award.

Academic Credentials & Professional Honors

Ph.D., Physics, University of California, Berkeley, 2016

M.A., Physics, University of California, Berkeley, 2009

B.A., Applied Mathematics and Physics, University of California, Berkeley, 2006

Jackson C. Koo Award in Condensed Matter Physics, 2015

Outstanding Graduate Student Instructor, 2007-2008

R&D 100 Award for "Extended Pressure Inductive Coupled Plasma-synthesized Boron Nitride Nanotubes (EPIC BNNTs)," 2015

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Licenses and Certifications

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

Fire Investigation 2A, California Office of State Fire Marshal

Fire Investigation 2B, California Office of State Fire Marshal

Fire Investigation: Techniques of Fire Investigation (1B), California State Fire Marshall (CA)

Fire Investigation 1A (Cause and Origin), California Office of State Fire Marshal (CA)

Certificate of Training from Fire Investigation Industries for Forensic Vehicle Fire Investigation

Professional Affiliations

National Association of Fire Investigators (NAFI)

American Physical Society (APS)

Materials Research Society (MRS)

National Fire Protection Association (NFPA)

Engineers Without Borders

Languages

Azerbaijani

Persian

Patents

US Patent 20170197832 A1: System and methods for fabricating boron nitride nanostructures, July 2017 (A Fathalizadeh, T Pham, W Mickelson, A Zettl).

Publications

Rasool H, Dunn G, Fathalizadeh A, Zettl A. Graphene-sealed Si/SiN cavities for high-resolution in situ electron microscopy of nano-confined solutions. Physica Status Solidi (b) 2016; 253(12):2544.

Pham* T, Fathalizadeh* A, Shevitski B, Turner S, Zettl A. A universal wet-chemistry route to metal-filling of boron nitride nanotubes. Nano Letters 2016; 16(1):320-325 (*equal contribution).

Fathalizadeh A, Pham T, Mickelson W, Zettl A. Scaled synthesis of boron nitride nanotubes, nanoribbons, and nanococoons using direct feedstock injection into an extended-pressure, inductively-coupled thermal plasma. Nano Letters 2014; 14(8):488-4886.

Vazquez-Mena O, Bosco J, Ergen O, Rasool HI, Fathalizadeh A, Tosun M, Crommie M, Javey A, Atwater H, Zettl A. Performance enhancement of a graphene-zinc phosphide solar cell using the electric field-effect. Nano Letters 2014; 14(8):4280-4285.

Fathalizadeh A, Boekelheide Z. Electric and magnetic characterization of sputtered iron thin films.

Berkeley Science Review, 2007.

Presentations

Ziegler J, Blaikie A Fathalizadeh A, Miller D, Mohrhardt J, Williams K, Zettl A, Aleman B. Single photon emission from zero-dimensional boron nitride nano-structures. Presentation at 2018 APS March Meeting, Los Angeles, CA, March 6, 2018.

Fathalizadeh A. Synthesis of boron nitride nanotubes, nanoribbons, and nanocacoons via an extended-pressure, inductively-coupled thermal plasma. Poster presented at 2015 International Winterschool on Electronic Properties of Novel Materials, (IWEPNM), Austria, March 9, 2015.

Fathalizadeh A. Synthesis of boron nitride nanotubes, nanoribbons, and nanocacoons via an extended-pressure, inductively-coupled thermal plasma. Talk presented at 2015 APS March Meeting, San Antonio, TX, March 2, 2015.

Fathalizadeh A. Synthesis of boron nitride nanotubes via an inductively-coupled thermal plasma. Poster presented at Molecular Foundary and National Center for Electron Microscopy 2014 Users' Meeting, Berkeley, CA, August 25, 2014.

Fathalizadeh A. Singly-clamped nanotube electromechanical oscillators. Poster presented at Lawrence Berkeley National Laboratory - U. S. Department of Energy Review, January 16, 2013.

Fathalizadeh A. Graphene liquid cells. Poster presented at Lawrence Berkeley National Laboratory - U. S. Department of Energy Review, January 17, 2013

Fathalizadeh A. Dispersive microwave readout of nanoSQUIDS. Presented at Superconducting Devices and Applications session of 2009 APS March Meeting, Pittsburgh, PA, March 2009.

Fathalizadeh A. Electric and magnetic characterization of sputtered iron thin films. Poster presented at Physics Department Undergraduate Research Poster Session, Berkeley, CA, April 2007.