JOHN EMIL PETERSEN III, PHD, MS

Full Stack Dev | CAD | Materials Science | Physics | Engineering | Control Systems | Consulting

http://n-dtech.com | https://www.linkedin.com/in/johnepetersen | (520) 304-7534 | ceo@n-dtech.com

https://www.researchgate.net/profile/John-Petersen-Iii

https://github.com/tarbalreboot

https://orcid.org/0000-0002-6907-8418

Professional Experience

Business Owner, Founder, and CEO **Jan 2018 –**

N-Dimensional Engineering (http://n-dtech.com)

∞ Developed robotic positioning system (mount) from scratch for Alt-Az telescopes
∞ Achieved a level of performance appropriate for professional data acquisition
∞ Secured intellectual property such that valuation exceeds $100 million
∞ https://www.tiktok.com/t/ZTRTc5E4w/ (Basic demonstration – robotics and control systems)

Research Associate **Jan 2012 – Dec 2017**

Texas State University, Department of Physics

∞ Calculated physical properties of novel materials via quantum mechanical first-principles
∞ Utilized Linux high-performance computing clusters to compile, run, and/or write various scientific programs using C/C++, bash, and other programming languages
∞ Characterized structural and electronic properties of materials via x-ray diffraction, atomic force microscopy, and Hall measurements, often using LabView
∞ Presented original results at professional society conferences and in peer-reviewed journals

Teaching Assistant **Aug 2011 – May 2015**

Texas State University, Department of Physics

∞ Introduced students to fundamental laws of electrodynamics and basic electrical engineering principles, through theoretical lecture and practical demonstration
∞ Became exceptionally familiar with circuits and their components

Various independent contractor roles, including Financial Adviser **(2006-2011)**

Skills

∞ Demonstrated hard coding and mathematical modeling ability with C/C++, linking libraries
∞ Showcased systems engineering capability in the robotics, electrical, and mechanical engineering communities with both interpreted and compiled programming languages
∞ Seasoned scripting skills with bash, awk, and C#
∞ Well-practiced in both relational (SQL) and key-pair (non-SQL) development and query
∞ Developed several professional websites (html, css, and php)
∞ Versed in Linux and Windows, whether in the terminal, Visual Studio, or office suites
∞ Experienced at public speaking, as evidenced by professional society meetings
∞ Skilled in materials characterization by XRD, AFM, and Hall measurements
∞ Talented with both CAD and shop tools, bringing design to prototype

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Education

PhD, Materials Science, Engineering, and Commercialization **Dec 2017**
Texas State University

"Impurities in Antiferromagnetic Transition-Metal Oxides – Symmetry and Optical Transitions"
https://digital.library.txstate.edu/handle/10877/6921?show=full
GPA: 3.74

Master of Science, Physics **May 2013**
Texas State University

"First Principles Study of Structural, Electronic, and Mechanical Properties of Lead Selenide and Lead Telluride"
https://digital.library.txstate.edu/handle/10877/4556?show=full
GPA: 3.13, Excellence in Graduate Research Award (May 2013)

Bachelor of Science, Physics **Dec 2010**
University of Texas at San Antonio

GPA: 3.34

- ∞ Co-founder and treasurer of local branch of Society of Physics Students
- ∞ Best Paper award at ABES Student Conference, 2010
- ∞ Dean's list (multiple)
- ∞ Omicron Delta Kappa leadership honor society member

Bachelor of Arts, Liberal Arts **Aug 2005**
University of Texas at Austin

- ∞ Minor in Business Foundations
- ∞ Studied Business Spanish abroad at ESADE, in Barcelona, Spain (summer 2002)

Oral Presentations at National Conferences

APS March Meeting, New Orleans, LA **Mar 2017**
Ab Initio study on structural, electronic, magnetic and dielectric properties of LSNO within Density Functional Perturbation Theory, J. Petersen, et al.
http://meetings.aps.org/link/BAPS.2017.MAR.A8.2

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APS March Meeting, Baltimore, MD **Mar 2016**

First Principles Study of Oxygen Vacancies and Iron Impurities on Electrical and Optical Properties of NiO, J. Petersen, et al.

http://meetings.aps.org/link/BAPS.2016.MAR.Y30.9

Selected Publications (Reverse Chronological)

9. Symmetry Considerations on Band Filling and First Optical Transition in NiO, J. Petersen, et al., **The European Physical Journal B** (**2019**) 92: 232.
https://doi.org/10.1140/epjb/e2019-100363-5

8. Spontaneous symmetry breaking and electronic and dielectric properties in commensurate $La_{7/4}Sr_{1/4}CuO_4$ and $La_{5/3}Sr_{1/3}NiO_4$, J. Petersen, et al., **Physical Review B** 97 (195129).
https://doi.org/10.1103/PhysRevB.97.195129

7. Carrier Lifetimes of Iodine-Doped CdMgTe/CdSeTe Double Heterostructures Grown by Molecular Beam Epitaxy, S. Sohal, et al., **Journal of Electronic Materials** 46 (9).
https://doi.org/10.1007/s11664-017-5646-y

6. Iodine Doping of CdTe and CdMgTe for Photovoltaic Applications, O.S. Ogedengbe, et al., J**ournal of Electronic Materials** 46 (9).
https://doi.org/10.1007/s11664-017-5588-4

5. Effect of Free-Carrier Concentration and Optical Injection on Carrier Lifetimes in Undoped and Iodine Doped CdMgTe/ CdSeTe Double Heterostructures Grown by Molecular Beam Epitaxy, S. Sohal, et al., **Journal of Physics D Applied Physics** 49 (50).
http://stacks.iop.org/0022-3727/49/i=50/a=505104

4. Factors Influencing Photoluminescence and Photocarrier Lifetime in CdSeTe/CdMgTe Double heterostructures, C. Swartz, et al., **Journal of Applied Physics** 120 (16).
https://doi.org/10.1063/1.4966574

3. The Effect of Anisotropic Valleys on Phonon Scattering and the Magnetotransport Properties of n-Type PbTe, C. Swartz, et al., **Journal of Electronic Materials** 45 (1).
https://doi.org/10.1007/s11664-015-4184-8

2. Thermoelectric Properties of IV-VI-Based Heterostructures and Superlattices, P. Borges, et al., **Journal of Solid State Chemistry** 227 (123).
https://doi.org/10.1016/j.jssc.2015.03.027

1. Elastic and Mechanical Properties of Intrinsic and Doped PbSe and PbTe Studied by First-Principles, J. Petersen, et al., **Materials Chemistry and Physics** 146 (3).
https://doi.org/10.1016/j.matchemphys.2014.03.055