

Dr. John Winter Murphy

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Professional Career & Studies

- Jun 2021-Present **CEO, Such Software LLC**, Webshop Services & Development, such.software
Kennett Square, PA
- Provide custom webshops for artists including e-commerce functionality, inventory management, and payment processing.
 - Develop and maintain new software and web applications related to cryptocurrency.
- Jun 2023-May 26 **Associate Professor, Cecil College**, Engineering, cecil.edu
North East, MD
- Oversee the Engineering program, including teaching most courses, managing the curriculum, maintaining the machine shop and lab equipment, and supervising and mentoring students.
 - Teach one upper level course in Materials Science and Engineering for Frostburg State University per semester.
 - Founded the Engineering Club at Cecil College to promote student engagement and professional development.
- Jul 2022-Aug 25 **CEO, Tabby Labs Inc**, Cryptocurrency Wallet Development, github.com
Newark, DE
- Research and development of a user-friendly cryptocurrency wallet application with a built-in Roblox-style world.
 - Established as a Delaware stock corporation for raising venture capital.
- Jun 2021-Apr 25 **COO, Patrn LLC**, NFT Products & Services, art101.io
Sheridan, WY
- Developed MVP of creator platform for crowdfunding NFTs.
 - Produced over 35,000 NFTs in twelve collections that were distributed for free on Ethereum that have done over \$2.5M in secondary volume.
- Jan 2021-May 21 **Nuclear Engineer, Holtec International**, Nuclear Waste Management, holtec.com
Camden, NJ

- Performed modeling for shielding of dry cask storage systems.
 - Developed Fortran code for optimal unloading of spent fuel pools to dry cask storage.
- Jun 2017-Jan 21 **Member of Technical Staff, Lawrence Livermore National Laboratory, Nuclear Detection & Power Generation, llnl.gov**
Livermore, CA
- Co-PI on R&D project to develop high-power density radioisotope batteries, including high aspect ratio three-dimensional semiconductor structures, liquid semiconductors, and scintillation concepts – including device modeling, fabrication, and performance characterization.
 - Assist in design, characterization, and testing of novel materials for mid-IR sensing, compact neutron detectors, and corrosion sensors.
- Apr 2015-Jun 17 **Postdoctoral Researcher, Lawrence Livermore National Laboratory, Nuclear Detection & Testing, llnl.gov**
Livermore, CA
- Perform research and analysis of advanced semiconductor radiation detectors, including the assembly and testing of a semiconductor based neutron multiplicity detector.
 - Assisted in the development and testing of novel types of radioisotope batteries.
- Jun 2008-Dec 14 **Graduate Research Assistant, University of Texas at Dallas, Thin-film Semiconductors, utdallas.edu**
Dallas, TX
- Performed modeling and data analysis using MCNP and Python to determine the optimum thickness for the semiconductor diode in a thin film neutron detector.
 - Identified polycrystalline CdTe as a novel and economical material for thin film charged particle and neutron detectors, fabricated, and tested thin film CdTe sensors using an alpha and neutron source.
 - Procured a ^{252}Cf neutron source for the University of Texas at Dallas and led the installation, safety protocol development, and calibration.

Memberships & Associations

- Apr 2020-Present **Board Member, VP, and Treasurer, MAGIC Grants, Privacy and Cryptocurrency**
Non-profit, magicgrants.org
Denver, CO
- Jan 2014-Present **Technical Reviewer, Journal of Electronic Materials, Semiconductor and Materials Science, springer.com**

Honors & Awards

- LLNL Global Security Silver award for contributions to Radioisotope Battery Workshop in Feb 2020
- Silver award for Excellent Contribution to 2016 LLNL Postdoc Poster Symposium
- Certificate of Recognition for Inventive Contribution, 2011 & 2012
- Excellence in Education Fellowship, 2009
- Drexel Pennoni Honors College Graduate, 2007

Publications & Presentations

Peer-reviewed Articles

- Jarrell, J., Cherepy, N., Seeley, Z., **Murphy, J.**, Swanberg, E., Voss, L., Frye, C., Stoyer, M., Henderson, R., O'Neal, S., et al. (2022). Beta radiation hardness of GYGAG (Ce) transparent ceramic scintillators [Publisher: IEEE]. *IEEE Transactions on Nuclear Science*, 69(4), 938–941.
- Nakotte, T., Munyan, S. G., **Murphy, J. W.**, Hawks, S. A., Kang, S., Han, J., & Hiszpanski, A. M. (2022). Colloidal quantum dot based infrared detectors: extending to the mid-infrared and moving from the lab to the field [Publisher: Royal Society of Chemistry]. *Journal of Materials Chemistry C*, 10(3), 790–804.
- Nakotte, T., Munyan, S. G., **Murphy, J. W.**, Hawks, S. A., Kang, S., Han, J., Hiszpanski, A. M., & Nypelö, T. (2022). Materials for optical, magnetic and electronic devices. *J. Mater. Chem*, 100(10), 860.
- Frye, C., Shao, Q., **Murphy, J.**, Harrison, S., Voss, L., Edgar, J., & Nikolic, R. (2021). α Irradiation Response on the Electronic Transport Properties of p-B12P2 [Publisher: Springer US]. *Journal of Electronic Materials*, 50(1), 75–79.
- Frye, C. D., **Murphy, J. W.**, Shao, Q., Voss, L. F., Harrison, S. E., Edgar, J. H., & Nikolić, R. J. (2021). Hall Effect Characterization of α -Irradiated p-Type 4H-SiC. *physica status solidi (b)*, 258(3), 1900781.
- Murphy, J. W.**, Frye, C. D., Henderson, R. A., Stoyer, M. A., Voss, L. F., & Nikolic, R. J. (2021). Demonstration of a three-dimensionally structured betavoltaic [Publisher: Springer US]. *Journal of Electronic Materials*, 50, 1380–1385.
- Murphy, J. W.**, Voss, L. F., Frye, C. D., Shao, Q., Kazkaz, K., Stoyer, M. A., Henderson, R. A., & Nikolic, R. J. (2019). Design considerations for three-dimensional betavoltaics [Publisher: AIP Publishing]. *AIP Advances*, 9(6).
- Bulumulla, C., Gunawardhana, R., Gamage, P. L., Kularatne, R. N., Biewer, M. C., & Stefan, M. C. (2018). π -spacer-linked bithienopyrroles with tunable optical properties [Publisher: \copyright Georg Thieme Verlag]. *Synlett*, 29(19), 2567–2571.
- Murphy, J. W.**, Shao, Q., Voss, L. F., Kerr, P. L., Fabris, L., Conway, A. M., & Nikolic, R. J. (2018). Pillar-structured neutron detector based multiplicity system [Publisher: North-Holland]. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 877, 355–358.
- Voss, L., **Murphy, J.**, Shao, Q., Henderson, R., Frye, C., Stoyer, M., & Nikolic, R. (2018). Selenium-iodide: A low melting point eutectic semiconductor [Publisher: AIP Publishing]. *Applied Physics Letters*, 113(24).
- Smith, L., **Murphy, J.**, Kim, J., Rozhdestvensky, S., Mejia, I., Park, H., Allee, D., Quevedo-Lopez, M., & Gnade, B. (2016). Thin film CdTe based neutron detectors with high thermal neutron efficiency and gamma rejection for security applications [Publisher: North-Holland]. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 838, 117–123.
- Huang, P., Du, J., Gunathilake, S. S., Rainbolt, E. A., **Murphy, J. W.**, Black, K. T., Barrera, D., Hsu, J. W., Gnade, B. E., Stefan, M. C., et al. (2015). Benzodifuran and benzodithiophene donor–acceptor polymers for bulk heterojunction solar cells [Publisher: Royal Society of Chemistry]. *Journal of Materials Chemistry A*, 3(13), 6980–6989.
- Ramos, J., Mejia, I., **Murphy, J.**, Quevedo, M., Garcia, P., & Martinez, C. (2015). Synthesis of titanium oxide nanoparticles using DNA-complex as template for solution-processable hybrid dielectric composites [Publisher: Elsevier]. *Journal of Alloys and Compounds*, 643, S84–S89.
- Murphy, J. W.**, Smith, L., Calkins, J., Kunnen, G., Mejia, I., Cantley, K., Chapman, R., Sastré-Hernández, J., Mendoza-Pérez, R., Contreras-Puente, G., et al. (2014). Thin film cadmium telluride charged

- particle sensors for large area neutron detectors [Publisher: AIP Publishing]. *Applied Physics Letters*, 105(11).
- Rainbolt, E. A., Bhatt, M. P., **Murphy, J. W.**, Edward, B., Gnade, M. C. B., & Stefan, M. C. (2014). Benzodithiophene Homopolymers Synthesized by Grignard Metathesis (GRIM) and Stille Coupling Polymerizations.
- Kularatne, R. S., Taenzler, F. J., Magurudeniya, H. D., Du, J., **Murphy, J. W.**, Sheina, E. E., Gnade, B. E., Biewer, M. C., & Stefan, M. C. (2013). Structural variation of donor–acceptor copolymers containing benzodithiophene with bithienyl substituents to achieve high open circuit voltage in bulk heterojunction solar cells [Publisher: Royal Society of Chemistry]. *Journal of Materials Chemistry A*, 1(48), 15535–15543.
- Murphy, J. W.**, Kunnen, G. R., Mejia, I., Quevedo-Lopez, M. A., Allee, D., & Gnade, B. (2012). Optimizing diode thickness for thin-film solid state thermal neutron detectors [Publisher: AIP Publishing]. *Applied Physics Letters*, 101(14).
- Murphy, J. W.**, Mejia, I., Gnade, B. E., & Quevedo-Lopez, M. A. (2012a). CdS Interfacial Layers in ZnO Nanowire/Poly (3-Hexylthiophene) Solar Cells.
- Murphy, J. W.**, Mejia, I., Gnade, B. E., & Quevedo-Lopez, M. A. (2012b). Evaluation of CdS Interfacial Layers in ZnO Nanowire/Poly (3-Hexylthiophene) Solar Cells [Publisher: Hindawi Publishing Corporation]. *Journal of Nanomaterials*, 2012(1), 192456.
- Hundt, N., Palaniappan, K., Sista, P., **Murphy, J. W.**, Hao, J., Nguyen, H., Stein, E., Biewer, M. C., Gnade, B. E., & Stefan, M. C. (2010). Synthesis and characterization of polythiophenes with alkenyl substituents [Publisher: Royal Society of Chemistry]. *Polymer Chemistry*, 1(10), 1624–1632.
- Sista, P., Nguyen, H., **Murphy, J. W.**, Hao, J., Dei, D. K., Palaniappan, K., Servello, J., Kularatne, R. S., Gnade, B. E., Xue, B., et al. (2010). Synthesis and electronic properties of semiconducting polymers containing benzodithiophene with alkyl phenylethynyl substituents [Publisher: American Chemical Society]. *Macromolecules*, 43(19), 8063–8070.
- Krebs, F. C., Gevorgyan, S. A., Gholamkhash, B., Holdcroft, S., Schlenker, C., Thompson, M. E., Thompson, B. C., Olson, D., Ginley, D. S., **Murphy, J. W.**, & et al. (2009). A round robin study of flexible large-area roll-to-roll processed polymer solar cell modules [Publisher: North-Holland]. *Solar Energy Materials and Solar Cells*, 93(11), 1968–1977.
- Palaniappan, K., **Murphy, J. W.**, Khanam, N., Horvath, J., Alshareef, H., Quevedo-Lopez, M., Biewer, M. C., Park, S. Y., Kim, M. J., Gnade, B. E., et al. (2009). Poly (3-hexylthiophene)- CdSe quantum dot bulk heterojunction solar cells: influence of the functional end-group of the polymer [Publisher: American Chemical Society]. *Macromolecules*, 42(12), 3845–3848.

Patents

- Jarrell, J., Cherepy, N., **Murphy, J. W.**, Nikolic, R. J., & Swanberg Jr, E. L. (2024, Juli). *Indirect conversion nuclear battery using transparent scintillator material* (Nr. 12050291).
- Voss, L., Frye, C., Henderson, R. A., **Murphy, J. W.**, Nikolic, R. J., Qu, D., Shao, Q., & Stoyer, M. A. (2023, August). *Liquid semiconductor-halogen based electronics* (Nr. 11721771).
- Jarrell, J., Cherepy, N., **Murphy, J. W.**, Nikolic, R. J., & Swanberg Jr, E. L. (2022, August). *Indirect conversion nuclear battery using transparent scintillator material* (Nr. 11415713).
- Frye, C., Henderson, R. A., **Murphy, J. W.**, Nikolic, R. J., Qu, D., Shao, Q., Stoyer, M. A., & Voss, L. (2020, Juni). *Radiation tolerant microstructured three dimensional semiconductor structure* (Nr. 10685758).

Presentations & Conference Proceedings

- Murphy, J. W.** (2025). Creating Problems (and Solutions) with AI.
Conference Presentation at 35th Annual AFACCT Conference.
- Murphy, J. W.** (2024a). Free and Open Source Alternatives.
Conference Presentation at 34th Annual AFACCT Conference.

- Murphy, J. W.** (2024b). Free and Open Source Software (FOSS) Accessibility.
Conference Presentation at 2024 Transitions Symposium.
- Murphy, J. W.** (2024c). The History of Money.
Invited Talk at the Hockessin Historical Society.
- Murphy, J. W.** (2024d). How to Tell if Your Favorite Cryptocurrency Is a Scam.
Conference Presentation at Monerotopia.
- Murphy, J. W.** (2024e). Monero is Free and Open Source Software. <https://www.youtube.com/watch?v=p6yVMivL5kc>
Conference Presentation at Monerokon.
- Murphy, J. W.** (2023). What the Heck Is Wownero.
Conference Presentation at Monerotopia.
- Murphy, J. W.,** Frye, C. D., Qian, F., Despotopoulos, J. D., Henderson, R. A., Shao, Q., Kazkaz, K., Voss, L. F., & Nikolic, R. J. (2018). Three-dimensionally structured betavoltaics.
Poster Presentation at the 76th Device Research Conference.
- Murphy, J. W.,** Voss, L. F., Frye, C. D., Shao, Q., Stoyer, M. A., Henderson, R. A., & Nikolic, R. J. (2017, November). Selenium-iodine as a Liquid Semiconductor.
Conference Presentation at MRS Fall Meeting.
- Shao, Q., Voss, L. F., **Murphy, J. W.,** Frye, C. D., Henderson, R. A., Stoyer, M. A., Qu, D., & Nikolic, R. J. (2017). Accelerated Aging in 4H-SiC as a Betavoltaic Semiconductor Using an Electron Beam System. *IEEE Nuclear Science Symposium and Medical Imaging Conference*.
- Murphy, J. W.,** Shao, Q., Voss, L. F., Kerr, P. L., Guethlein, G., Fabris, L., Conway, A. M., & Nikolic, R. J. (2016). Pillar-structured Neutron Detector Based Multiplicity System
Poster Presentation at SORMA West.
- Murphy, J. W.,** Smith, L., Chung, H., Kunnen, G. R., Johnson, C. D., Rodriguez-Davila, R. A., Mejia, I., Allee, D. R., Quevedo-Lopez, M. A., & Gnade, B. E. (2014). Integration of CdTe sensors with active pixel sensor amplifiers.
Poster Presentation at the Domestic Nuclear Detection Office Academic Research Initiative Project Review.
- Kunnen, G. R., **Murphy, J. W.,** Allee, D. R., Quevedo-Lopez, M. A., & Gnade, B. E. (2013). A Multi-stage charge sensitive active pixel sensor for use in neutron detection applications.
Poster Presentation at the Domestic Nuclear Detection Office Academic Research Initiative Project Review.
- Mejia, I., Salas-Villasenor, A. L., **Murphy, J. W.,** Kunnen, G. R., Cantley, K. D., Allee, D. R., Gnade, B. E., & Quevedo-Lopez, M. A. (2013). High-performance logic circuits using solution-based, low-temperature semiconductors for flexible electronics. *SPIE Defense, Security, and Sensing*.
- Murphy, J. W.,** Eddy, A., Kunnen, G. R., Mejia, I., Cantley, K. D., Allee, D. R., Quevedo-Lopez, M. A., & Gnade, B. E. (2013). Sol gel ZnO doped with Mg and Li evaluated for charged particle detectors.
- Murphy, J. W.,** Kunnen, G. R., Mejia, I., Smith, L., Cantley, K. D., Chapman, R. A., Allee, D. R., Quevedo-Lopez, M. A., & Gnade, B. E. (2013). Polycrystalline thin-film semiconductor materials for charged particle and neutron detectors.
Conference Presentation at Domestic Nuclear Detection Office Academic Research Initiative Project Review.
- Murphy, J. W.,** La Rosa, K., Kunnen, G. R., Cantley, K. D., Mejia, I., Allee, D. R., & Gnade, B. E. (2013). Polycrystalline ZnO as a material for radiation detectors.
Conference Presentation at MRS Spring Meeting.
- Murphy, J. W.,** Smith, L., Calkins, J., Mejia, I., Kunnen, G. R., Allee, D. R., Quevedo-Lopez, M. A., & Gnade, B. E. (2013). Material evaluation and device design for large area neutron detectors.
Conference Presentation at AVS Texas Chapter Conference.

- Kunnen, G. R., Pressler, D., Lee, E. H., Allee, D. R., **Murphy, J. W.**, Mejia, I., Quevedo-Lopez, M. A., & Gnade, B. E. (2012). Large area sensing arrays for detection of thermal neutrons. *Nuclear Science Symposium and Medical Imaging Conference*.
- Murphy, J. W.**, Kunnen, G. R., Mejia, I., Allee, D. R., Quevedo-Lopez, M. A., & Gnade, B. E. (2012). Optimizing diode thickness for thin-film neutron detectors.
Poster Presentation at the Domestic Nuclear Detection Office Academic Research Initiative Project Review.
- Murphy, J. W.**, Mejia, I., Quevedo-Lopez, M. A., & Gnade, B. E. (2011). Novel materials and device structures for solid-state charged particle detectors.
Poster Presentation at the AVS 58th International Symposium.