Exponent®
Engineering & Scientific Consulting

Gilbert Annohene

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Professional Profile

Dr. Annohene is a highly accomplished expert in the development of programs/projects in process development and optimizations, digital transformation and analytics, experimenting and simulating semiconductor logic and memory devices, and research and development of novel nanomaterial technologies. He has experience in development, synthesis, characterization, and testing of nanostructured materials and devices spanning across the semiconductor, photovoltaics, polymer, biomedical, and food industries.

At Exponent, Dr. Annohene focuses on developing, executing, and managing projects/programs to drive productivity for clients, including process improvement and optimization, quality control and assurance, product development, safety, risk assessment, digital transformation, and data analytics. He also specializes in helping clients develop emerging technologies and improve existing ones through research and development, experimentation, testing, design, prototyping, and commercialization. With his extensive experience using MATLAB, SolidWorks, Python, ANSYS, and many statistical software programs, including SigmaPlot, JMP, and Originlab, Dr. Annohene is well-equipped to tackle any challenge in his field.

With his vast expertise in complex material characterization techniques such as scanning electron microscopy (SEM), x-ray diffraction (XRD), atomic force microscopy (AFM), ultra-visible spectroscopy (UV-Vis), Fourier-transform infrared spectroscopy (FT-IR), nano-indenter, and mass spectrometer, Dr. Annohene is well-equipped to analyze and interpret data from a wide range of sources. He also has extensive experience with thin film deposition equipment, including thermal and electro-beam evaporators, sputtering, and electrospray, which he has used in the development of complex nanodevices.

Dr. Annohene has worked the development and management varied Defense Advanced Research Project Agency (DARPA) programs during his career. He also served as a Process and Analytics Engineering Consultant at International Flavors and Fragrances, where he deployed digital manufacturing tools and executed process improvement programs. Dr. Annohene holds a PhD in the development of perovskite solar cell devices and has patented a novel approach using supercritical fluids in annealing the perovskite active layers to achieve both high-efficient and scalable devices.

Academic Credentials & Professional Honors

Ph.D., Mechanical and Nuclear Engineering, Virginia Commonwealth University, 2021

M.Sc., Mechanical and Nuclear Engineering, Virginia Commonwealth University, 2019

B.Sc., Mechanical Engineering, Kwame Nkrumah Univ of Sci and Tech, Ghana, 2016

Licenses and Certifications

Red Cross - CPR/AED Certificate

Prior Experience

Scientific/Engineering Consultant, Defense Advanced Research Project Agency, Microsystems Technology Office, 2022-2023

Process & Analytics Engineer Consultant, International Flavors and Fragrances, Digital Manufacturing Department, 2021-2022

Professional Affiliations

Institutes of Electrical and Electronics Engineers — IEEE

Patents

US Patent (62/905,511): Low temperature formation of perovskite films in supercritical fluids, September 2019 (Gary Tepper, Gilbert Annohene)

Publications

G. Annohene, G.C. Tepper, Moisture stability of perovskite solar cells processed in supercritical carbon dioxide, Journal of Molecules, 26 (2021) 7570.

G. Annohene, G.C. Tepper, Efficient perovskite solar cells processed in supercritical carbon dioxide, J. Supercritical Fluids. 171 (2021) 105203.

G. Annohene, G.C. Tepper, Supercritical fluid-assisted crystallization of CH3NH3PbI3 perovskite films, J. Supercritical Fluids. 156 (2020) 104684.

G. Annohene, G.C. Tepper, Low temperature formation of CH3NH3PbI3 perovskite films in supercritical carbon dioxide, J. Supercritical Fluids. 154 (2019) 104604.

J. Bracamonte, S.K Saunders, S. Cole, G. Annohene, G.C Tepper, J. S Soares, In vitro degradation of electrospun polycaprolactone tissue engineering scaffolds under cyclical dynamic loading, Summer Biomechanics, Bioengineering and Biotransport Conference 2019, PA.

Presentations

National Renewable Energy Laboratory, Low temperature formation of CH3NH3PbI3 perovskite films in supercritical carbon dioxide, Golden Colorado, 2019.

International Society for Optics and Photonics, Low temperature formation of CH3NH3PbI3 perovskite films in supercritical carbon dioxide, San Diego California, 2019

International Society for Optics and Photonics – Digital Forum, Supercritical fluid-assisted crystallization of CH3NH3PbI3 perovskite films, San Diego California, 2020.