Exponent®
Engineering & Scientific Consulting

Elio Gonzalez, Ph.D.

Associate | Materials Science and Electrochemistry
Phoenix
+1-623-587-6775 | egonzalez@exponent.com

Professional Profile

Dr. Gonzalez-Correa is trained as a materials engineer with expertise in Li- and Na-ion battery technologies, specializing in polyanionic, layered, and olivine structured cathode materials. His background spans the full range of battery material development, from synthesis and structural design to advanced electrochemical characterization giving him a comprehensive understanding of how material-level decisions drive cell-level performance. He uses his technical expertise to lead cell quality assessments, and support failure analysis and battery pack design investigations for consumer electronics, electric vehicles, and battery energy storage systems.

Prior to joining Exponent, Dr. Gonzalez-Correa served as an Analytical Lab Engineer at Tesla where he focused on materials characterization, battery failure analysis, and process quality. In this role, he applied a range of analytical techniques to investigate performance degradation and safety related failure modes in lithium-ion cells. He utilized nuclear magnetic resonance (NMR) spectroscopy to characterize electrolyte composition, degradation pathways, and impurity profiles, and leveraged inductively coupled plasma optical emission spectroscopy (ICP-OES) to quantify trace metal contamination in electrolytes and digested solids, supporting root cause analysis of manufacturing defects.

Dr. Gonzalez-Correa earned his Ph.D. in Materials Engineering from the University of California, Santa Barbara, where his research applied advanced solid-state NMR, X-ray diffraction (XRD), and scanning electron microscopy with energy dispersive spectroscopy (SEM/EDS) to investigate how dopant-driven structural changes in Li- and Na-ion cathodes influence intercalation behavior, with validation provided by electrochemical testing techniques (GCPL, GITT, dQ/dV, and CV). His combined academic foundation and industry experience position him to provide rigorous, data-driven analysis across battery safety, reliability, and performance.

Academic Credentials & Professional Honors

Ph.D., Materials, University of California, Santa Barbara, 2024

B.S., Applied Physics, California State University, San Bernardino, 2018

National Science Foundation Graduate Readiness Fellowship – 2019

National Science Foundation Bridge to Doctorate Fellowship – 2018

Prior Experience

Analytical Lab Engineer, Tesla, 2024-2026

Publications

Gonzalez-Correa E, Mazumder M, Kumar K, Ghosh S, Senguttuvan P, Clément RJ. High voltage irreversibilities in NASICON Na3+yV2-yMgy(PO4)3 cathodes. Chemistry of Materials 2025; 37(16):6323–6334.

Sebti E, Evans H, Chen H, Richardson P, White K, Giovine R, Koirala KP, Xu Y, Gonzalez-Correa E, Wang C, Brown CM, Cheetham AK, Canepa P, Clément RJ. Stacking faults assist lithium-ion conduction in halide-based superionic conductor. Journal of the American Chemical Society 2022; 144(13):5795–5811.

Ghosh S, Barman N, Gonzalez-Correa E, Mazumder M, Zaveri A, Giovine R, Manche A, Pati SK, Clément RJ, Senguttuvan P. Elucidating the impact of Mg substitution on the properties of NASICON Na3+yV2-yMgy(PO4)3 cathodes. Advanced Functional Materials 2021; 31:2105463.

Foley EE, Wong A, Vincent RC, Manche A, Zaveri A, Gonzalez-Correa E, Menard G, Clément RJ. Probing reaction processes in Earth-abundant Na3FeF6 for Na-ion batteries. Phys. Chem. Chem. Phys. 2021; 23:20052–20064.

Xiao R, Hou Y, Fu Y, Peng X, Wang Q, Gonzalez-Correa E, Jin S, Yu D. Photocurrent mapping in single-crystal methylammonium lead Iodide perovskite nanostructures. Nano Letters 2016; 16(12):7710–7717.

Presentations

Gonzalez-Correa E, Zhou F, Clément RJ. Impact of V substitution on the electrochemistry of the Na3V2(PO4)3 NASICON cathode. Poster presentation, International Battery Materials Association (IBA) Conference, Austin, TX, 2023.

Gonzalez-Correa E, Giovine R, Clément RJ. Development and characterization of proton-conductors for solid oxide fuel cell applications. Poster presentation, North American Solid State Chemistry Conference (NASSCC), Golden, CO, 2019.