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Engineering & Scientific Consulting

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Professional Profile

Dr. Xing specializes in materials science and engineering, focusing on next generation electrochemical energy storage and conversion technologies including Li-ion batteries, Li-sulfur batteries and solid-state batteries. He is versed in a variety of classical materials science characterization techniques which include X-ray photoelectron spectroscopy (XPS), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), focused ion beam (FIB), Raman spectroscopy, Ultraviolet-visible spectroscopy (UV-Vis), X-ray powder diffraction (XRD), thermogravimetric analysis spectroscopy (TGA). Additionally, Dr. Xing gained extensive hands-on experience on electrochemical characterizations including galvanostatic cycling with potential limitation (GCPL), cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS). His deep knowledge of electrochemical, mechanical and microstructural characterization of materials allows him to evaluate/determine failure mechanism in materials and devices.

Prior to joining Exponent, Dr. Xing worked as a Graduate Research Assistant at University of California San Diego, where he received a Ph.D. in Materials Science and Engineering. His research focused on designing, fabricating and evaluating all-solid-state battery devices through the help of chemical, electrochemical and mechanical characterizations. In addition, Dr. Xing has extensive experience with the sulfur-contained cathode performance optimization.

Academic Credentials & Professional Honors

Ph.D., Materials Science and Engineering, University of California, San Diego, 2020

M.S., Chemical Engineering, University of California, San Diego, 2015

B.S., Applied Chemistry, Tianjin University, China, 2013

Languages

Mandarin Chinese

Patents

US Patent, Publication # 20200176822: Self-forming Solid State Batteries and Self-healing Solid Electrolyte, June 2020 (Ping Liu, Byoung-Sun Lee).

Publications

Li Y, Wang X, Zhou H, Xing X, Banerjee A, Holoubek J, Liu H, Meng YS, Liu P. Thin Solid Electrolyte Layers Enabled by Nanoscopic Polymer Binding. ACS Energy Letters 2020; 5: 955-961.

Xing X, Li Y, Wang S, Liu H, Wu Z, Yu S, Holoubek J, Zhou H, Liu P. Graphite-based Lithium-free 3D Hybrid Anodes for High Energy Density All-solid-state Batteries. ACS Energy Letters 2021; 6: 1831-1838.

Xing X, Li Y, Wang X, Petrova V, Liu H, Liu P. Cathode electrolyte interface enabling stable Li–S batteries. Energy Storage Materials 2019; 21: 474-480.

Lim HD, Lim HK, Xing X, Lee BS, Liu H, Coaty C, Kim H, Liu P. Solid electrolyte layers by solution deposition. Advanced Materials Interfaces 2018, 5, 1701328.

Lim HD, Yue X, Xing X, Petrova V, Gonzalez M, Liu H, Liu P. Designing solution chemistries for the low-temperature synthesis of sulfide-based solid electrolytes. Journal of Materials Chemistry A 2018, 6: 7370-7374.

Lee BS, Cui S, Xing X, Liu H, Yue X, Petrova V, Lim HD, Chen R, Liu P. Dendrite suppression membranes for rechargeable zinc batteries. ACS applied materials & interfaces 2018; 10: 38928-38935.

Lee BS, Wu Z, Petrova V, Xing X, Lim HD, Liu H, Liu P. Analysis of rate-limiting factors in thick electrodes for electric vehicle applications. Journal of the Electrochemical Society 2018; 165 (3) A525-A533.

Liu H, Yue X, Xing X, Yan Q, Huang J, Petrova V, Zhou H, Liu P. A scalable 3D lithium metal anode. Energy Storage Materials 2018; 16: 505-511.

Liu H, Zhou H, Lee BS, Xing X, Gonzales M, Liu P. Suppressing lithium dendrite growth with a single-component coating. ACS applied materials & interfaces 2017; 9: 30635-30642.

Kim YJ, Xing X, Choi DY, Hwang CH, Choi C, Kim G, Jin S, Hwang KJ, Park J. Study of the photocatalytic properties of bio-mimicked hollow SnO2 microstructures synthesized with Ceiba pentandra (L.) Gaertn.(kapok) as a natural template. New Journal of Chemistry 2015; 39 (10): 7754-7758.