Meilin Liu

Hightower Chair and Regents' Professor
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Education

University of California at Berkeley, Materials Science & Engineering, PhD, 1989; MS, 1986
South China University of Technology, Materials Science & Engineering, BS, 1982

Appointments

1992-present	Regents' Professor (2008-present), Professor (2000-2008), Associate Professor (1996-2000), Assistant Professor (1992-1996), School of Materials Science and Engineering (MSE), Georgia Institute of Technology, Atlanta, Georgia
2021-present	*Hightower* Endowed Chair, School of MSE, Georgia Tech
2015-2021	*B. Mifflin Hood* Endowed Chair, School of MSE, Georgia Tech
2012-2022	Associate Chair, School of MSE, Georgia Tech
2010-2015	Associate Director, *HeteroFoam* – a DOE Energy Frontier Research Center at USC
2001-2016	Co-Director, Center for Innovative Fuel Cell and Battery Technologies
1989-1992	Research Scientist, Ceramatec, Salt Lake City, Utah

Research Interests

The research interests of the Liu Group encompass the design, fabrication, characterization, and simulation of various materials, including membranes, thin films, coatings, and porous electrodes with heterogeneous surfaces and interfaces, as well as devices for energy storage and conversion such as fuel cells, batteries, electrolyzers, and supercapacitors. Our primary focus is to understand how the structure, composition, and morphology of these materials influence their electrical, chemical, catalytic, and electrochemical properties, particularly concerning charge and mass transfer along surfaces, across interfaces, and through complex porous structures. Our group is dedicated to developing innovative strategies and materials aimed at enhancing the efficiency and cost-effectiveness of chemical and energy transformation processes. Our research encompasses synthesis and fabrication techniques, in situ/operando characterization methods, and multi-scale modeling approaches. Our overarching objective is to systematically design materials and structures with unique functionalities to elevate energy storage and conversion efficiency.

Professional Service

Co-organized **11** national/international symposia/workshops, co-edited **7** proceedings volumes, and chaired many sections in the area of fuel cells, batteries, supercapacitors, sensors, and membranes for gas separation.

Served on numerous review panels and provided technical reviews for various organizations, including US National Science Foundation, Department of Energy, Department of Defense, US Department of Commerce, American Chemical Society, US Civilian Research and Development Foundation (CRDF), European Science Foundation, Singapore Science/Engineering Foundation, Korean Science Foundation, Canada Research Chairs, Israel Science and Engineering Foundation, and various states in the US: Connecticut, Ohio, South Carolina, Tennessee, and West Virginia. He has also contributed

technical reviews to Stanford University, MIT, Beijing University, Tsinghua University, National University of Singapore, Nanyang Technical University, University of Hong Kong, and others.

Additionally, he has acted as a technical reviewer for numerous technical journals, including *Science, Science Advances, Nature, Nature Energy, Nature Materials, Nature Comms., Energy Environ. Sci., Adv. Mater., Adv. Energy Mater., Adv. Functional Mater., Joule, Nano Letters, ACS Nano, JACS, ACS Energy Lett., Materials Today, Nano Energy, ACS Catalysis, Solid State Ionics, J. Electrochem. Soc., Int. J. Hydrogen Energy*, among others.

Furthermore, he has held various offices in professional organizations, including the Electrochemical Society (ECS) Student Award Committee, The High-Temperature Materials Division of ECS (Executive Committee Member), the Georgia Section of ECS (Secretary, Vice President, and President), and the Georgia Tech Chapter of Sigma Xi - An International Honor Society on Scientific Research (Secretary, Vice President, and President).

Editorial Board Membership: *Nano Energy* (IF: 17.88), Nature Publishing Group *Asia Materials* (IF: 10.76), *Solid State Ionics* (IF: 3.785), *Batteries* (IF: 5.938), *Rare Metals* (IF: 4.9)

Students Supervised: **35** postdoctoral, **43** PhD, **29** joint-PhD, and **13** MS students, ~**21** visiting scholars; many of his former students/advisees are now conducting pioneering research in major industrial research centers and academia in the US and abroad. ~**30** of his former postdoctoral/PhD students are **faculty** members in universities in the US, China, South Korea, and Span.

Sponsors: **Federal Agencies:** DOE Basic Energy Science; SECA, National Energy Technology Laboratory; ARPA-E; EERE; NSF-DMR; NSF-CTS, DARPA; ONR; ARO/DURIP; NASA.

National Labs: Argonne National Laboratory (ANL); Oak Ridge National Laboratory (ORNL)

Non-profit Organizations: American Chemical Society (ACS) - Petroleum Research Fund (PRF); Electric Power Research Institute (EPRI); Gas Research Institute (GRI); GT Research Corporation

Industries: Hyundai Motor Company; CBMM (Brazil); Nissan-North America; Samsung Advanced Institute of Technology (SAIT); TOPSOE Fuel Cells; Phillips 66; ConocoPhillips; nGmat, Pall Corporation; Nissan Motor Company; Samsung Display Devices; Toyota Technology Center, Toyota Motor Company; Shell Chemical; MicroCoating Technologies; Gazillion Bits; Symphonic Optical Technologies; Reactive Energy; Johnson Electromechanical Systems; Engelhard; Caleb Technology Corporation; Kimberly-Clark; Ceramatec; Eka Nobel Chemicals; Cummins Engine Co., and Elkem

Publications, Presentation, and Patents

Published **20** review articles; **7** book chapters, and **~680** refereed papers *in Science (1), Nature (1), Nature Energy (1), Nature Comms (7), Energy Environ. Sci.(23), Adv. Mater.(19), Adv. Energy Mater.(21), Adv. Functional Mater.(24), Joule (2), Angew. Chem. Int. Ed.(7), Nano Letters (9), ACS Nano (8), JACS (2), Chem. Soc. Rev. (1), ACS Energy Lett. (5), Mat. Sci. Eng. Report (2), Materials Today (4), Nano Energy (28), ACS Catalysis (7), Energy Storage Mater.(11) Adv. Sci. (6), Chem. Mater. (11), ChemSusChem (8), J. Mat. Chem. A (32), and so forth*
Google Scholar Citations: **~77,000**; h-index: **153**

Highly Cited Researcher (2018 to present)
Presented ~**200** invited**,** keynote, or plenary lectures around the world to conferences, workshops, universities, national labs, and industries

Awarded ~**31** US/World Patents and filed ~**10** patent applications on new materials and novel structures for batteries, fuel cells, supercapacitors, sensors, and membranes for gas separation; co-founded one company (***Polyplus***) based on some of the patents

Selected Awards and Honors

2018 to 2023 - Highly Cited Researcher (*Materials Science, Chemistry, Environment and Ecology)*
2021 - Hightower Endowed Chair Professor
2021 - Fellow, International Association of Advanced Materials (IAAM)
2018 - HTM Outstanding Achievement Award (Electrochemical Society)
2018 - Charles Hatchett Award (Institute of Materials, Minerals and Mining, UK)
2017 - Kolon Faculty Fellow (Kolon Industries)
2015 - B. Mifflin Hood Endowed Chair Professor
2013 - Outstanding Faculty Research Author Award (Georgia Tech)
2012 - Fellow, Electrochemical Society (ECS)
2011 - Fellow, American Ceramic Society (ACerS)
2010 - Ross Coffin Purdy Award (American Ceramic Society)
2008 - Regents' Professor
2007 - NASA Tech Brief Award
2007 - Invited participant, US-Japan Frontiers of Engineering (National Academy of Engineering)
2005 - Crystal Flame Innovation Award in Research (FuelCell South)
2003 - Outstanding Achievement in Research Program Development Award (Georgia Tech)
2003 - Sustained Research Award (Sigma Xi)
2002 - Senior Teaching Fellow (Georgia Tech)
2001 - Best Faculty Paper Award (Sigma Xi)
1999 - Outstanding Faculty Research Author Award (Georgia Tech)
1997 - Invited participant, Frontiers of Engineering (National Academy of Engineering)
1996 - Best MS Thesis Advisor Award (Sigma Xi)
1993 - National Young Investigator (NYI) Award (National Science Foundation)