

# MIT Industrial Liaison Program Faculty Knowledgebase Report

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Energy @MIT

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April 13, 2021 10:00 am - 12:00 pm

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10:00 AM

Welcome and Introduction  
Sheri Brodeur

Director of Corporate Relations  
MIT Corporate Relations

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Sheri Brodeur is director of Corporate Relations at MIT. Prior to this she spent 22 years at Hewlett-Packard Company in several roles. Her most recent position was in the HP Labs Strategy and Innovation Office. The role of this organization is to set HP Labs research strategy and extend HP's internal research capacity by partnering with universities, governments and other companies on a global scale to much more rapidly advance the positive impact of technology on the world.

Sheri spent 15 years with HP Labs, HP's corporate researcher center, managing major university alliances and programs, including a \$25M program with MIT. She has been responsible for managing global higher education technology programs in the areas of Security, Digital Libraries (DSpace), Information Management, and Sustainability.

Prior to this role she spent the previous eight years at Hewlett-Packard in the sales organization moving from the position of Field Sales Engineer to Global Account Manager. In this role she was responsible for selling, supporting and delivering high end test and measurement solutions for the communications industry.

Brodeur has a BS in Ceramic Engineering from Alfred University and an MS in Solid State Science from the Materials Research Laboratory at Penn State University.

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10:05 AM

A Low-Carbon Energy Future and the Opportunities for Industry  
Robert Armstrong  
Director, MIT Energy Initiative (MITEI)  
Chevron Professor of Chemical Engineering



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Chevron Professor of Chemical Engineering

Professor Robert C. Armstrong directs the [MIT Energy Initiative](#), an Institute-wide effort at MIT linking science, technology, and policy to transform the world's energy systems. A member of the MIT faculty since 1973, Armstrong served as head of the Department of Chemical Engineering from 1996 to 2007. His research interests include polymer fluid mechanics, rheology of complex materials, and energy.

Armstrong has been elected into the American Academy of Arts and Sciences (2020) and the National Academy of Engineering (2008). He received the Founders Award for Outstanding Contributions to the Field of Chemical Engineering (2020), Warren K. Lewis Award (2006), and the Professional Progress Award (1992), all from the American Institute of Chemical Engineers. He also received the 2006 Bingham Medal from the Society of Rheology, which is devoted to the study of the science of deformation and flow of matter,

Armstrong was a member of MIT's [Future of Natural Gas](#) and [Future of Solar Energy](#) study groups. He advised the teams that developed MITEI's most recent reports, [The Future of Nuclear Energy in a Carbon-Constrained World](#) (2018) and [Insights into Future Mobility](#) (2019), and is co-chairing the new MITEI study, [The Future of Storage](#). He co-edited [Game Changers: Energy on the Move](#) with former U.S. Secretary of State George P. Shultz.

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10:20 AM

CCUS in a Carbon Constrained World  
T. Alan Hatton  
Ralph Landau Professor of Chemical Engineering Practice  
Director, David H Koch School of Chemical Engineering Practice  
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T. Alan Hatton is the Ralph Landau Professor and Director of the David H. Koch School of Chemical Engineering Practice at MIT. Research interests include exploitation of structured fluids in chemical processing operations. We have focused most recently on the use of tailored solvents, and of surface-modified magnetic fluid nanoparticles, to enhance reaction and separation processes to minimize pollution.

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10:35 AM

Fusion, Present and Future  
Dennis G. Whyte  
Director, MIT Plasma Science and Fusion Center  
Hitachi America Professor of Engineering  
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Director, MIT Plasma Science and Fusion Center  
Hitachi America Professor of Engineering

A recognized leader in fusion research, Whyte's research in the magnetic confinement of plasmas sets us on an innovative and faster path to producing fusion energy. He is one of the leaders of the SPARC project, a collaboration between Commonwealth Fusion Systems and MIT, to design and build a high-field fusion device to demonstrate net energy production for the first time. Many of the technology approaches underpinning the high-field approach to fusion energy, including SPARC, were formed over the last decade in his MIT fusion design class: utilizing magnets from high-temperature superconductors, demountable magnets for modular assembly and maintenance, and liquid immersion blankets for robust energy removal. He is a fellow of the American Physical Society, has served on panels for the National Academies and Royal Society, and has won the Fusion Power Associates Leadership Award and the 2013 Nuclear Fusion Prize. He is a co-founder of Commonwealth Fusion Systems, whose goal is the rapid commercialization of fusion energy to tackle climate change. Whyte earned his BS and PhD in Canada.

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MIT Startup Exchange Lightning Talk

[PolyJoule](#): Non-lithium based energy storage for the electricity grid

Eli Paster  
CEO  
[PolyJoule](#)

MIT Startup Exchange Lightning Talk

[JETCOOL](#): Cooling for high power electronics

Bernie Malouin  
Founder & CEO  
[JETCOOL](#)

MIT Startup Exchange Lightning Talk

[Takachar](#): Trash is cash: small-scale, decentralized biomass upgrading

Kevin Kung  
Co-founder, President & CTO  
[Takachar](#)

MIT Startup Exchange Lightning Talk

[Syzygy Plasmonics](#): First photocatalytic reactor for low-cost, on-demand hydrogen

Trevor Best  
CEO  
[Syzygy Plasmonics](#)

11:10 AM

Battery Technologies and Recent Advances

Ju Li

Battelle Energy Alliance Professor of Nuclear Science and Engineering

Professor of Materials Science and Engineering

Ju Li

Battelle Energy Alliance Professor of Nuclear Science and Engineering

Professor of Materials Science and Engineering

Ju Li has held faculty positions at the Ohio State University and University of Pennsylvania, and is presently a chaired professor at MIT. His [group](#) investigates the mechanical, electrochemical, and transport behaviors of materials, as well as novel means of energy storage and conversion. Li is a recipient of the 2005 Presidential Early Career Award for Scientists and Engineers, the 2006 Materials Research Society Outstanding Young Investigator Award, and the TR35 award from Technological Review. He was elected Fellow of the American Physical Society in 2014 and a Fellow of the Materials Research Society in 2017. Thomson Reuters/Clarivate included Li in its Highly Cited Researchers list in 2014/2018 in Materials Science category. In 2016, he co-founded one of the MIT Energy Initiative (MITEI) Low-Carbon Energy Centers, the Center for Materials in Energy and Extreme Environments (CME).

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Integrated, Renewable Energy Systems

Alex Slocum

Walter and Hazel May Professor of Mechanical Engineering

Director, Precision Engineering Research Group (PERG)

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Director, Precision Engineering Research Group (PERG)

Alexander Slocum is the Walter and Hazel May Professor of Mechanical Engineering at MIT and a member of the US National Academy of Engineering. He has 130+ patents and has helped develop 12 products that have received R&D 100 awards for "one of the one hundred best new technical products of the year". He has helped start several successful precision manufacturing equipment companies and has a passion for working with industry to solve real problems and identify fundamental research topics. For the past decade his prime focus has been on renewable energy systems.

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Closing Remarks