

# MIT Industrial Liaison Program Faculty Knowledgebase Report

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## Energy Innovation (Session 1: Energy Transitions & Economics)

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May 6, 2020 11:00 am - 1:00 pm

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11:00am - 11:05pm

Introduction  
CJ (Changjie) Guo  
Program Director, [MIT Corporate Relations](#)



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[MIT Corporate Relations](#)

Dr. CJ Guo joined the Office of Corporate Relations as a Senior Industrial Liaison Officer in July, 2015. CJ comes to OCR with 25 years of extensive global experience in technology innovations, portfolio management and business development in emerging and conventional energy sectors with leading multinational corporations in the US, China and Canada.

CJ is a leading expert in emerging energy technologies and energy system transitions. With Shell, he was the Emerging Technology Theme Leader in China/Beijing (2011 to 2015), worked extensively with the Chinese energy communities on the country's future energy landscape, and the Senior Technology Advisor in alternative transportation fuels in the US / Houston (2006-2010), and served during 2010 as Chairman of the Fuel Operations Group for the US DOE FreedomCar Partnership. Prior to joining Shell, CJ has held technology development, commercialization and management positions with Air Liquide (2002-2006) and The BOC Group (1995-2001) after working as a research scientist in oil-sands upgrading with CANMET in Canada (1992-1994).

CJ earned his Ph.D., Chemical Engineering, at CSU, Ohio, his M.S. and B.S., Chemical Engineering at TYUT, China. He has earned various awards from Shell, Air Liquide, BOC, Shanxi Province (China). He holds many patents and has sat on the board of Shenzhen Sanmu Battery Technology Company as an independent board member during 2009-2010.

11:05am - 11:35am

## Combating Climate Change: Developing a Sustainable Energy Future

Robert Armstrong

Chevron Professor of Chemical Engineering

Director, [MIT Energy Initiative \(MITEI\)](#)



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Chevron Professor of Chemical Engineering

Director

[MIT Energy Initiative \(MITEI\)](#)

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.

[View full bio](#)

11:35am - 12:00pm

## Decarbonization in a Post-Coronavirus World

Chris Knittel

George P. Shultz Professor of Applied Economics

MIT Sloan School of Management

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**Christopher R. Knittel** is the George P. Shultz Professor of Applied Economics at the Sloan School of Management, Director of the Center for Energy and Environmental Policy Research, and Co-Director of the MITEI Low-Carbon Energy Center for Electric Power Systems Research at the Massachusetts Institute of Technology. He joined the faculty at MIT in 2011, having taught previously at UC Davis and Boston University. Professor Knittel received his B.A. in economics and political science from the California State University, Stanislaus in 1994 (*summa cum laude*), an M.A. in economics from UC Davis in 1996, and a Ph.D. in economics from UC Berkeley in 1999. His research focuses on environmental economics, industrial organization, and applied econometrics. He is a Research Associate at the National Bureau of Economic Research in the Productivity, Industrial Organization, and Energy and Environmental Economics groups. Professor Knittel is an associate editor of the *American Economic Journal: Economic Policy*, the *Journal of Industrial Economics* and *Journal of Energy Markets*. His research has appeared in the *American Economic Review*, the *American Economic Journal*, the *Review of Economics and Statistics*, the *Journal of Industrial Economics*, the *Energy Journal* and other academic journals.

12:00pm - 12:25pm

#### Materials Supply Chain Considerations in the Energy Transition

Elsa Olivetti

Associate Dean, MIT School of Engineering; Jerry McAfee Professor in Engineering;

Professor, [MIT Department of Materials Science and Engineering](#)



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Associate Dean, MIT School of Engineering; Jerry McAfee Professor in Engineering;

Professor

[MIT Department of Materials Science and Engineering](#)

Professor Olivetti received a BS in engineering science from the University of Virginia in 2000, and a PhD in materials science and engineering from MIT in 2007. She spent her PhD program studying the electrochemistry of polymer and inorganic materials for electrodes in lithium-ion batteries. In 2014, she joined DMSE as an assistant professor. As an educator, Olivetti overhauled DMSE's undergraduate curriculum and developed new courses, including one for the MIT Climate and Sustainability Consortium Climate Scholars. She's a member of the MIT Climate Nucleus and co-director of the MIT Climate & Sustainability Consortium.

Professor Elsa Olivetti's research focuses on improving the environmental and economic sustainability of materials. Specifically, she develops analytical and computational models to provide early-stage information on the cost and environmental impact of materials. Professor Olivetti and her research-group colleagues work toward improving sustainability through increased use of recycled and renewable materials, recycling-friendly material design, and intelligent waste disposition. The Olivetti Group also focuses on understanding the implications of substitution, dematerialization, and waste mining on materials markets.

12:25pm - 12:50pm

#### Decarbonizing urban passenger transportation: Technology can only get you so far

Joanna Moody

Research Program Manager, MIT Mobility Systems Center



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Joanna Moody is the Research Program Manager for the Mobility Systems Center, MIT Energy Initiative's newest Low-Carbon Energy Center and a lead researcher on one of the Center's first projects measuring the "option value" of owning a car (including convenience, flexibility, control, and status that comes from owning the asset). Joanna's research uses econometrics and psychometrics, paired with structural equation modeling, to explore the interactions between policies, attitudes, and ownership and use of privately-owned, gasoline-powered vehicle. Joanna holds Ph.D. (2019) and M.S. (2016) degrees in Transportation from MIT.

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12:50pm - 1:00pm

Wrap-Up