Mechanical Engineering Department Seminar

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1130 Mechanical Engineering
111 Church Street SE, Minneapolis, MN 55455

Shale Gas: Green Energy Revolution or a Bridge to Nowhere?

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In the United States and around the globe, the rapid expansion of oil and natural gas production from shale and other tight geologic formations brings significant opportunity along with questions and controversy about potential effects on people and the environment. This talk will begin with a brief overview of the shale gas revolution, its implications for the United States energy supply, and the key technologies behind it (high volume hydraulic fracturing and horizontal drilling). I will then explore some of the controversies surrounding the potential environmental impacts and benefits of shale gas development, focusing air quality and climate. I will present results from chemical transport modeling and field measurements to illustrate the potential impacts of natural gas production on local and regional air quality, including ozone, fine particulate matter, and air toxics. I will also discuss several recent national-scale measurement campaigns to improve methane emissions inventories (methane is the dominant component of natural gas and a powerful greenhouse gas). The results reveal that superemitters (abnormally high emitting sources) play an important role in both the air quality and climate impacts of natural gas development.

Bio: Allen L. Robinson is the Raymond J. Lane Distinguished Professor and Head of the Department of Mechanical Engineering at Carnegie Mellon University. His research examines the impact of emissions from energy systems on air quality and global climate, including substantial work on shale gas. He recently served on the Health Effect Institute's Special Scientific Committee on Unconventional Oil and Gas Development in the Appalachian Basin.