Department of Chemical and Environmental Engineering

2015—2016 Seminar Series

Friday, February 5, 2016

9:30-10:30am

Winston Chung Hall 205/206

Mike Hannigan

Associate Professor and Chair

University of Colorado Boulder

What can you do with a $500 real-time air quality monitor?

Over the past two decades, inexpensive chemical sensors have become common place, appearing in indstrial applications and even automobiles. Recently, there has been a push to get those sensors into environmental monitoring as low cost air quality monitoring opens new avenues of research, empowers citizens to explore their air, and even allows developing countries to leapfrog technology when developing their own environmental assessments. Previously those low cost sensors were employed in relatively high concentration environments where the temperature and humidity conditions were relatively constant; this is not the case for most environmental monitoring. Hannigan's research has been working at the forefront of this new tools devevlopment effort. They have developed multiple tools but their focus is on improving the ability to use these tools quantitatively. For this talk, Mike will give discuss devices and sensors and their potential to be used to in specific applications. Several case studies of low cost sensor use will be provided to demonstrate their utility. These case studies will include air exchange rates on the CU campus, CO exposure to cooks in northern Ghana, ozone spatial variability at mutiple small scale sites, and methane variability in an oil and gas production basin in Colorado. Additionally, there will be a discussion of the use of these tools to develop new project based learning curriculum for rural high school students.

Biosketch: Mike Hannigan is an Associate Professor and the Chair of the Mechanical Engineering Department at the University of Colorado. Prior to joining CU, Mike spent time at both CSU Atmospheric Sciences and MIT Environmental Health Sciences as a postdoctoral researcher. He earned a PhD in Environmental Engineering Science from Caltech in 1997, and BS in Civil Engineering from SMU in 1990. Mike's research efforts center on the measurement and analysis of air quality related to energy development, with the main air quality focus on health impacts. His research has significant overlap with his teaching interests. He has won several teaching awards and is currently leading the Education and Outreach component of the NSF funded AirWaterGas Sustainability Research Network project.

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