

## ACOM Seminar

# New sensors for large-scale air quality monitoring

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An important air quality parameter, from a human health perspective, is the mass concentration of particles smaller than  $2.5\mu\text{m}$ , i.e. PM<sub>2.5</sub>. The importance of this air quality parameter for human health was first established from a series of epidemiological studies in the US and Europe in 1990s and subsequently, PM<sub>2.5</sub> has become globally accepted as one of the critical measures of air pollution. Conventional PM<sub>2.5</sub> monitoring by national agencies has been based on techniques focused on accuracy of mass measurements rather than convenience of deployment. With the need for high temporal- and spatial-resolution of air quality data for health effect studies, newer measurement technologies are increasingly being explored and deployed.

In this talk, I will provide an overview of the currently available low-cost monitoring technologies and their advantages and limitations. I will then introduce our efforts to develop a new low-cost aerosol monitoring instrument based on electrical-mobility technique for real-time monitoring of particle size, number, and mass concentrations over a broad diameter range of 10 nm to 2.5  $\mu\text{m}$ . The combination of existing and emerging low-cost monitoring sensors will help improve our understanding of health effects of aerosol particles and result in the evolution of more locally-appropriate air quality parameters.

Suresh Dhaniyala is the Bayard D. Clarkson Distinguished Professor of Mechanical and Aeronautical Engineering at Clarkson University and the co-Director of the Center for Air Resources Engineering and Sciences (CARES). Suresh's research interests include: development of novel aerosol sensing techniques, opto-electrical aerosol measurements, aerosol resuspension, atmospheric aerosol sampling and analysis, and computational fluid dynamics simulations. Professor Dhaniyala's research and teaching accomplishments have been recognized with Clarkson's John W. Graham Jr Award, NSF's CAREER grant, and Fulbright-Nehru scholar award.

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NCAR Foothills Laboratory

3450 Mitchell Lane, Boulder, CO 80301

**FL2-1001, Small Auditorium**

Live webcast: <http://ucarconnect.ucar.edu/live>

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