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Challenges in Fuel Cell Development from Heat Transfer and Fluid Flow Considerations

Fuel cells are being considered for transportation sector, where fuel efficiency, weight and cost considerations are of paramount importance. As we develop the fuel cell technology for replacing the rugged, well-established internal combustion technology, we are facing a number of challenges from fluid flow and heat transfer considerations. The new paradigms and constraints pose challenges in the design of various components. Attention will be focused on the design of bipolar plates, gas diffusion layer from heat transfer and water management perspectives.

Satish Kandlikar is the Gleason Professor of Mechanical Engineering at RIT. He received his Ph.D. degree from the Indian Institute of Technology in Bombay in 1975 and has been a faculty there before coming to RIT in 1980. His current work focuses on the heat transfer and fluid flow phenomena in microchannels and minichannels. He is involved in advanced single-phase and two-phase heat exchangers incorporating smooth, rough and enhanced microchannels. He has published over 180 journal and conference papers. Some of the accomplishments include:

- Fellow member of ASME
- Eisenhart Outstanding Teaching Award at RIT, 1997
- Trustees Scholarship award at RIT, 2006
- IBM Faculty award, 2003-2006
- Founder of ASME Rochester Heat Transfer Chapter
- Associate Editor of Journal of Heat Transfer, Heat Transfer Engineering, Nanofluidics and Microfluidics
- Author/Editor of Handbook of Phase Change (Taylor and Francis), Heat Transfer and Fluid Flow in Minichannels and Microchannels (Elsevier), chapters in several handbooks
- Founder of E-cubed fair for Middle schools students, held every year since 1991