



American Institute of Aeronautics & Astronautics  
**St. Louis Section**

# AIAA Technical Specialist Meeting

**Thursday, 22 October 2009**

Boeing Bldg 100 Cafeteria

## **Sustainable (Green) Aviation: Challenges and Opportunities**



*Presented by:*

**Ramesh K. Agarwal**

*William Palm Professor of Engineering  
 Washington University in St. Louis*



**Air travel continues to experience the fastest growth among all modes of transportation. Environmental issues such as noise, emissions and fuel burn (consumption), for both airplane and airport operations, have become important for energy and environmental sustainability. This talk will provide an overview of issues related to air transportation and its impact on the environment followed by topics dealing with noise and emissions mitigation via technological solutions including new aircraft and engine designs/technologies, alternative fuels, and materials as well as examination of aircraft operations logistics including Air-Traffic Management (ATM), Air-to-Air Refueling (AAR), Close Formation Flying (CFF), and tailored arrivals to minimize fuel burn. The ground infrastructure for sustainable aviation, including the concept of 'Sustainable Green Airport Design' will also covered.**

Professor Ramesh K. Agarwal is the William Palm Professor of Engineering and the director of Aerospace Engineering Program and Aerospace Research and Education Center at Washington University in St. Louis. From 1994 to 2001, he was the Sam Bloomfield Distinguished Professor and Executive Director of the National Institute for Aviation Research at Wichita State University in Kansas. From 1978 to 1994, he worked in various scientific and managerial positions at McDonnell Douglas Research Laboratories in St. Louis. He became the Program Director and McDonnell Douglas Fellow in 1990.

Dr. Agarwal received his Ph.D in Aeronautical Sciences from Stanford University in 1975, M.S. in Aeronautical Engineering from the University of Minnesota in 1969 and B.S. in Mechanical Engineering from Indian Institute of Technology, Kharagpur, India in 1968.

Over a period of 30 years, Professor Agarwal has worked in Computational Fluid Dynamics (CFD), Computational Magneto hydrodynamics (MHD) and Electromagnetics, Computational Aeroacoustics, Multidisciplinary Design and Optimization, Rarefied Gas Dynamics and Hypersonic Flows, Bio-Fluid Dynamics, and Flow and Flight Control. More recently, he has devoted some of his efforts to nanotechnology and renewable energy systems – in particular wind, solar and biomass. He is the author and coauthor of over 300 publications and serves on the editorial board of eight journals.

Dr. Agarwal is a Fellow of eleven societies - American Association for Advancement of Science (AAAS), American Institute of Aeronautics and Astronautics (AIAA), American Physical Society (APS), American Society of Mechanical Engineers (ASME), Royal Aeronautical Society (RAeS), Society of Manufacturing Engineers (SME), Society of Automotive Engineers (SAE), Institute of Electrical and Electronics Engineers (IEEE), American Academy of Mechanics, Academy of Science of St. Louis, and World Innovation Foundation (WIF). He has served as a distinguished lecturer of AIAA (1996-1999), ASME (1994-1997), and IEEE (1994-2009). He has received many honors and awards for his research contributions including the ASME Fluids Engineering Award (2001), AIAA Sustained Achievement Award (2002), ASME Charles Russ Richards Memorial Award (2006), Royal Aeronautical Society Gold Award (2007), AIAA Aerodynamics Award (2008), AIAA/SAE William Littlewood Lecture Award (2009) and James B. Eads Award of Academy of Science of St. Louis (2009).

### Schedule

Social/Snacks 4:30 – 5:00  
 Presentation 5:00 – 6:00

### Menu

Soda and Light Snacks

### Cost

\$2 per person - Pay at the Door

**Reservation Deadline Monday, 19 October**

**Ticket Sales and Reservation Contacts:**

**Brad Sexton 314-232-7826 [bradley.w.sexton@boeing.com](mailto:bradley.w.sexton@boeing.com)**

**Frank Youkhana 314-234-4811 [frank.w.youkhana@boeing.com](mailto:frank.w.youkhana@boeing.com)**

**Dan Johnson 314-232-3094 [daniel.j.johnson3@boeing.com](mailto:daniel.j.johnson3@boeing.com)**



Interested in joining AIAA? Contact  
 Brandon Wegge (314) 232-2933 for free  
 ticket information