

SEMINAR

**Thursday, February 4, 2010
2:00 – 3:30pm**

Seminar Room 4080 AIR Building

ENERGY AND ENVIRONMENTAL MODELING OF TRANSPORTATION SYSTEMS: NEW DEVELOPMENTS

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The transportation sector contributes approximately 30% of the total energy usage, which is mostly attributed to petroleum-based products such as gasoline and diesel fuels. Significant emissions of CO₂, a greenhouse gas linked to climate change, are attributed to the transportation sector. However, it would be difficult to imagine our modern life without motorized transportation. The more compelling fact is that though transportation is not the largest source of greenhouse gases, this sector is the fastest growing source and is difficult to control. Alternative transportation energy sources such as hybrid-electric technologies, bio-ethanol, and hydrogen fuel cells are emerging and are being broadly investigated as replacements for the conventional internal combustion engine. However, these new alternatives are still difficult to make competitive against oil-powered engines due to availability, cost, convenience, lack of technology, and accessibility.

No simple solutions are suggested on the road toward the energy efficient and greener future. One of the key strategies in improving vehicle fuel efficiency is through enhancing vehicle fuel efficiency either by enhancing the vehicle powertrain efficiency, or by using alternative fuels, or by managing the transportation system more efficiently. This presentation describes the research that is being conducted at Virginia Tech to develop energy and emission models for use in Advanced Traffic Management System (ATMS), Advanced Traveler Information System (ATIS), IntelliDrive system, and eco-drive system applications.