



DEPARTMENT OF MECHANICAL ENGINEERING Purdue School of Engineering and Technology

FALL 2004 SEMINAR SERIES

Date: **Thursday, September 9, 2004**
Time: 11:00 am - 12:00 pm
Room: **SL 165**

Reception at 10:45 am (cookies and refreshments served)
Everyone is invited

Low Emission In-Cylinder Diesel Combustion Strategies

Dr. Venkatesh Gopalakrishnan

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Abstract. Diesel engine manufacturers have to meet stringent emission regulation in the near future. This presentation highlights various combustion modes that can potentially be used for in-cylinder diesel combustion strategies that can meet the regulations. Conventional Diesel combustion has a trade-off between NO_x and particulates. Invariably, trying to reduce one of them increases the other. Are there any combustion modes that can break this tradeoff? Recent experiments from Sandia National Laboratories have shown that this it is possible! But in order to employ these modes in an engine, a tight closed loop combustion controller is necessary as they are very sensitive to the operating conditions. An illustration of basic understanding along with the challenges in terms of stability and controllability of these modes will be presented.

About the Speaker. Dr. Venkatesh Gopalakrishnan is currently working as a senior engineer in the combustion research group at Cummins Inc., Columbus, Indiana. He attended the Indian Institute of Technology, Chennai from 1994 to 1998 and graduated with a B.Tech. in Mechanical Engineering. He joined the graduate program at Purdue University, West Lafayette, Indiana in August 1998 where he received his Master of Science in Mechanical Engineering in December 2000 and a Ph.D. in Mechanical Engineering in August 2003. He worked with Prof. John Abraham at Purdue University as a research assistant in the area of modeling combusting diesel sprays. He is an author/co-author in four archival publications and has made several conference presentations. He has also held a teaching assistant position in the Internal Combustion Engines Laboratory at the School of Mechanical Engineering at Purdue University from January to May of 2001.