



PROGRAM

11:30 - 12:00 p.m. Pizza & Soda
12:00 - 12:45 p.m. Lecture (typical)
12:45 – 1:30 p.m. Q&A and Discussion

ABSTRACT

HCCI combustion is a very attractive combustion for its superior combustion characteristics, high thermal efficiency, smokeless and low NO_x emission. But it still has many challenges to launch the HCCI cars to a real market. And needs for computational simulation is very high to develop HCCI engines efficiently. In this presentation, general characteristics of HCCI combustion and modeling of HCCI combustion process will be presented. First, characteristics of HCCI combustion will be shown by comparing the combustion of current conventional engines, such as gasoline engines and diesel engines, and its benefits and challenges are discussed. Next, combustion processes of HCCI combustion will be explained from gas sample experiments results. Third, HCCI combustion modeling and examples of computational results will be presented. At the last, Future prospects of HCCI combustion will be discussed.

SEMINAR TITLE

“Homogeneous Charged Compression Ignition (HCCI) combustion – Benefits, Challenges and Its Modeling”

SEMINAR SPEAKER

**Tadashi Tsurushima,
Nissan Motor Company, LTD**

BIOGRAPHIC PROFILE

Tadashi Tsurushima graduated from Tokyo Institute of Technology in 1991 and directly began working at the Isuzu Advanced Engineering Center where he performed basic research on gasoline direct injection engines through 1996. His research focus then changed to diesel spray and combustion analysis using an optically accessible engine from 1996 to 1998. In 1998, he moved to small diesel engine development for the GM concept car "Precept" in the US PNGV project (1998-1999). In 1999 he transferred to New A.C.E. Institute (on loan) to investigate thermal efficiency improvement of diesel engines with HCCI combustion. In particular he examined knock heat transfer to the combustion chamber wall the chemical kinetics of ignition processes in HCCI engines. He returned to Isuzu Advanced Engineering Center 2001 while continuing his research on expanding the high-load operation limit of HCCI. He then began combustion modeling HCCI/Diesel engines with KIVA. In 2002 Tadashi moved to NISSAN Motor Company and focused on SI-combustion modeling (flame propagation & Diffusion combustion model) and fuel spray modeling for Gasoline Direct Injection Engines. Since 2004 he has been developing a reduced kinetic model and has been attempting combustion design of mass-production engines with 3-D CFD.