



# ERL Lecture Series

## IIT Kanpur



### Optical Diagnostics for Engine Research

#### Speaker

**Dr. Heinrich Voges**

**Managing Director, LaVision GmbH, Germany**

**Thursday, September 12, 2013**

**Time: 5:15 PM**

**Venue: ME Conference Room (FB364)**

In the past few years optical diagnostic techniques have become an established development tool in many research laboratories of the automotive industry. They are successfully applied to analyze in-cylinder processes such as flow generation, fuel injection, spray formation, atomization and mixing, ignition, combustion and finally formation and reduction of pollutants incl. soot. Basically the optical methods are aimed at producing better fuel efficiencies and reducing pollutant emissions. For the development of new engines (Direct Injection, DI-engines, hydrogen and methane fueled engines, downsizing concepts) or in special operation modes (cold start, part load, Exhaust Gas Recirculation, EGR, flexible injections, variable valve timing)

LaVision's laser diagnostic tools allow a much faster and more efficient development and thus save time and money. The current topic covers Multi-Parameter Laser Imaging Techniques- Laser Spray Imaging/ Local Droplet Sizing for spray visualization, evaporation, global and local droplet sizing. Further (Laser) Imaging in IC-Engines can be used in the applications such as optical engine, keyhole imaging, imaging components flow field, mixture preparation, combustion. The recent development includes Optical Sensor Systems for Engine Development which will provide optical engine indication: fuel, exhaust gas EGR, gas temperature.