



A special honor reserved for ME alumni with an exceptional level of achievement. An opportunity for us to bring them back home, hear their career experiences, and induct them into the Alumni Achievement Lecture Club to stay with LSU for ever.

## THE MECHANICAL ENGINEERING ALUMNI ACHIEVEMENT LECTURE

3:30PM, FRIDAY, MARCH 28, 2014  
FRANK H. WALK DESIGN PRES. ROOM

Laser-material interactions range from controlled energy deposition to achieve desired materials processing to analytical schemes designed to extract quantitative data. This talk will first consider deep UV laser-tissue interactions at the wavelength of 193 nm, which involves sufficiently high photon energy to photochemically break molecular bonds in most biological materials. The resulting photochemical interactions between the UV laser and tissue can enable tissue processing, such as the case with laser refractive laser surgery, commonly known as LASIK. This seminar will discuss the role of the excimer laser in LASIK, with emphasis on the physical interactions between the laser and tissue, as well as opportunities for modeling and real-time feedback during refractive surgery. Exploiting laser-tissue interactions provides additional opportunities for spectroscopic sensing schemes for skin cancer detection and potential bioimaging methodologies. Moving to higher laser power densities, laser-induced plasma spectroscopy is introduced as a diagnostic scheme for elemental analysis based on atomic emission spectroscopy.

### Laser-Material Interactions: Experiences from the Intersection of Photonics & Mechanical Engineering



BY

**DAVID W HAHN**

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David Hahn received his BSME (1986) and PhD (1992) degrees from Louisiana State University in Baton Rouge. Following graduation, he was a National Research Council Research Associate at the US Food and Drug Administration (1992-1994) where he worked on laser-tissue interactions, and then a member of the technical staff at Sandia National Laboratories (1994-1998), in the Combustion Research Facility and in the Exploratory Systems Group. David joined the University of Florida (Gainesville, FL) in 1998, and is currently Professor and Department Chair in the Department of Mechanical and Aerospace Engineering. His research and teaching interests are in the general area of thermal sciences, with on-going activities in solar-thermal chemistry and biomedical optical-based diagnostics.

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