

**Title**     **Impact of Tribology on Energy Consumption and Environmental Pollution**

**Speaker** Prof. Kyriakos Komvopoulos  
Department of Mechanical Engineering  
University of California, Berkeley  
USA



**Date & Time** Friday, November 8, 2013 4:00p.m.  
**Place** I<sup>2</sup>CNER Hall, Ito campus, Kyushu University

**Abstract**

Societal concerns for climate changes, global warming, and air pollution have dramatically increased in recent years. These undesirable environmental changes are mainly due to primary and secondary pollutants released by different industries. Global awareness has forced governments to institute stringent regulations to reduce or reverse these negative environmental impacts. Tribology can play a major role in offsetting several of the energy and environmental concerns. An overview of various energy resources including associated tribological problems and ecological impact will be presented first to place various industrial sectors and their impact on the environment in the right context. Then, some challenging tribological problems in the automotive, wind turbine and power plant industries will be presented and plausible solutions will be discussed in the context of green tribology.

**About the Speaker**

Professor Kyriakos Komvopoulos has been a faculty member of the Department of Mechanical Engineering at the University of California at Berkeley since 1989. He is internationally known for pioneering research in surface nanosciences and nanoengineering with important implications in several emerging technologies including communications, microelectronics, information storage, and biotechnology.

Professor Komvopoulos' research has been at the interfaces of mechanical and electrical engineering, surface physics and chemistry, and bioengineering, and is characterized by the interdisciplinary nature and combination of analytical and experimental techniques used to obtain insight into complex surface interaction phenomena. His research relies on the integration of fundamentals from mechanics, materials science, surface physical chemistry, bioengineering, and biology, spanning a broad range of length scales, from the mesoscopic down to the atomic and the molecular levels.

Early research accomplishments of Professor Komvopoulos include contact deformation at submicron scales, new friction theories of surfaces interacting in the presence of physicochemically adsorbed monolayers, surface plasticity and fracture of contacting bodies, acoustic emission analysis in surface sliding and machining, synthesis and characterization of ultrathin diamond and amorphous carbon films, adhesion forces in miniaturized electromechanical systems, and rheological behavior of boundary films.

**Host:** Professor Joichi Sugimura

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**CONTACT:** Research Support and International Affairs Division  
International Institute for Carbon-Neutral Energy Research  
TEL:092-802-6934 email:wpikenkyu@jimu.kyushu-u.ac.jp

