

## Title WHY WE CANNOT DO WITHOUT TRIBOLOGY?

**Speaker** Prof. Gwidon W. Stachowiak  
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**Date & Time** Friday, January 29, 2015 10:00 a.m.

**Place** Meeting room, 2F, I<sup>2</sup>CNER Bldg.1,  
 Ito campus, Kyushu University

### Abstract

Tribology is much older than the human civilization yet it is considered by many as a science of the future. Interactions between surfaces dictate and control the movement at macro and micro scales, from moving continental plates and glaciers, to animals, insects and MEMS. During the industrial revolution, tribology had not only gained significant practical prominence but, more importantly, it gained solid theoretical foundations leading to the development of new technologies which changed the world. It was no longer necessary to built oversized ship bearings hoping that they would work. Bearings behaviour could now be modelled and predicted. The concept of 'tribology', formally introduced in 1966, still remains valid even though the industry has since gone through dramatic changes. These changes have been dictated by the demands for new, reliable and more efficient products and machines. Over the last several decades new materials and surface treatments were developed, novel lubricants were introduced and new insights into the mechanisms of contacting surfaces were gained. The technological advancements, like the development of high-speed trains, aircraft, space stations, computer hard discs, artificial implants, and many other engineering and bio-medical systems, have only been possible through the advances in tribology.

However, as the human population grows and rapidly advances we face new challenges such as sustainability, climate change and gradual degradation of the environment. Problems of providing enough food, clean water and sufficient energy to human population to pursue a civilized life still remain largely unsolved. These challenges require new solutions and innovative technologies. As at the dawn of industrial revolution, tribology, in its own way, makes vital contributions in addressing the demands for advanced technological developments. In this presentation, the impact of tribology, from the early times until today, is briefly outlined. The problems that we currently face as a civilization and the role tribology can play in finding solutions to the current problems are discussed.

### About the Speaker

Professor Gwidon Stachowiak is the Head of the Tribology Laboratory at the School of Mechanical and Civil Engineering, Curtin University in Western Australia. His current work is focused on the development of methods for the characterization of multiscale 3D surface topographies, prediction of osteoarthritis in knee joints based on x-ray images and tribocorrosion. He is the Editor of Tribology and Practice book series published by John Wiley and member of the Editorial Boards of several tribological and bio-medical journals. He is also a member of several international committees including the Executive Committee of the International Energy Agency, Research and Development of Advanced Materials for Transportation. Professor Stachowiak has published extensively and wrote/contributed to several books. He is the leading author of the books 'Engineering Tribology' and 'Experimental Methods in Tribology' published by Elsevier. Recently, in 2014, he was awarded Tribology Gold Medal, the World's Highest Award in Tribology, awarded in recognition of his outstanding contribution to tribology while in 2012, he was awarded the title of Doctor Honoris Causa from the Ecole Centrale de Lyon, France.

**Host:** Professor Joichi Sugimura

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