

Impulse Talk: Ecotribology – Development, Prospects and Challenges

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1. Introduction

Ecotribology is gaining increasing attention. Our view of the environment has changed from regarding it as a constant that provides resources and acts as a sink for waste towards a more complex view, where the environment is seen as a variable that can be influenced by our activities (cf. industrialization, species extinction [1,2], global challenges [3]) and on which we are utterly dependent. Peter F. Jost said at the 4th WTC in Kyoto, Japan, in 2009 that a focus on tribology might give ‘breathing space’ while comprehensive solutions to environmental problems were being addressed and suggested that tribology must fall in line with the major politics of world environment and energy [4]. Ecotribology can be seen as the answer to this changed role of the environment. In the very word “Ecotribology” economical and ecological aspects meet, and indeed the field comprises green tribology, sustainability, ecological aspects, economical aspects, environmentally compatible lubricants, environmentally friendly tribology, tribology of eco-friendly applications, tribology for energy conservation, tribology for life and renewable energy tribology.

2. The Four Impulse Speakers and Their Interests

The four track organizers of the Ecotribology track at the 5th World Tribology Congress (Torino, Italy, September 8-13, 2013) will give this impulse talk for the subsequent panel discussion. They come from different professional and cultural backgrounds. Ille C. Gebeshuber is a physicist from Austria, Europe, currently living and working in Malaysia, Jianbin Luo is an expert in thin film lubrication and the superlubricity of liquids, heading the State Key Laboratory of Tribology in China, Braham Prakash is a mechanical engineer and working with high temperature tribology and tribomaterial-lubricant interactions, originally from the IIT Delhi (India), and currently living and working in close proximity of arctic region in the North of Sweden, and Zygmunt Rymuza is a mechanical engineer and tribology educator from Poland.

From their respective experience, the four track organizers will present their very own professional

approaches, views and ideas regarding Ecotribology and its development, prospects and challenges.

Zygmunt Rymuza for example will highlight design and fabrication of intelligent surfaces with well-controlled adhesive and friction properties looking from the point of view of mechatronics and taking into account ecological solutions of this problem met in nature e.g., in gecko feet. The aim of his work is to follow the biological ideas but with improvements which are possible from a technical point of view and powerful simulations.

Ille C. Gebeshuber will highlight new ways of teaching tribology, of disseminating and accessing tribology knowledge, of doing engineering and shaping our approaches towards a better, healthy and good way of living, that would not compromise future generations - all inspired by her biomimetics work in the Malaysian rainforest (Figure 1) with the largest sustainable system we know, living nature, and a deep understanding of trends and developments [5].



Figure 1 The wings of the Malaysian national butterfly, Raja Brooke's Birdwing, are an inspiration for tribologists concerning self-cleaning surfaces, exquisite temperature regulation and the benign production of colors without the use of pigments, simply by nanostructuring the surfaces. Background image © seabagg, <http://www.flickr.com/photos/seabagg/3923303391/>

3. The Panel Discussion

This impulse talk by the four Ecotribology track organizers shall set the stage and provide first topics for the discussion at the subsequent panel discussion at WTC 2013, with further key players in tribology, philosophy, technology assessment, biology, economy and ecology.

4. References

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