

Structural colour master stamp (fast and cheap, low-tech high-yield) from *Morpho peleides* butterfly wings

Ille C. Gebeshuber

Institute of Applied Physics, Vienna University of Technology
gebeshuber@iap.tuwien.ac.at

** CV:

Prof. Ille C. Gebeshuber is a University Professor of Physics from Austria, Europe. She is expert in Nanotechnology, Biomimetics and Tribology. She was born on April 10, 1969, in the small city Kindberg. On the schoolbus, when she wrote a message on the window to a friend who was outside, she discovered that - a natural lefthander - she can write in mirror. She uses this ability to stimulate the right side of her brain and thereby her creativity and cross-border thinking. This has had major influence on her scholarly development and achievements - unlike most other physicists and engineers her approach to science is wide and holistic, and inherently trans- and interdisciplinary, bridging over to biology, the arts and the social sciences. 2017 she was elected 'Austrian of the Year' in the category 'Research'.

From 2008 until 2015 she has been living and working in Malaysia, since 2016 she is back at her home institution, the Vienna University of Technology. Prof. Ille is associate editor of the IMechE Journal of Mechanical Engineering Science (SAGE Publishing, London, UK), editorial board member of various scientific journals, author of two books on biomimetics and nanotechnology and editor of a book on biomimetics by Springer Scientific Publishing. Since 2011 she has been scientific advisory board member regarding nanotechnology for the Lifeboat Foundation, a US American think tank safeguarding humanity. Her research interests comprise the use of nanotechnology and biomimetics to address global challenges for humankind.

Prof. Ille C. Gebeshuber serves on various international strategy boards. She has been acting as reviewer and advisor for agencies, universities, research institutions and public bodies. Prof. Ille is doing extensive public science outreach work and her professional activities are widely covered in the media. She loves to go on rainforest expeditions with her students, who come from different cultures and different fields (Europe & Asia, physics, engineering, biology, veterinary medicine, applied arts, fine arts).

Her research interests are located at the interface of biology, engineering and the arts, systems thinking and nanotechnology. She has experience in various expert panels, including the Science Advisory Board (Arlington, USA), the Strategy Board of the Austrian Center of Competence for Tribology (Wiener Neustadt, Austria), QS and THES University Rankings and the ISESCO Expert Panel on Nanotechnology.

** Abstract:

The talk will introduce the field of biomimetics to the attendants, and present a best practice study regarding biomimetics of butterfly wings. Biomimetics deals with intensely looking at living nature and learning from it for better approaches in science, technology, architecture and the arts. The deep principles of the underlying materials, structures and processes are identified, understood and transferred to applications and devices, ideas and concepts. In the best possible outcome, the resulting features have positive effects on people, plants animals and microorganisms. The specific example related to nanoimprint lithography will introduce a fast, cheap, and large imprint technology developed by my PhD student Dr. Sigrid Zobl. The master stamps that are obtained by the presented method are several square millimeters large, are produced within minutes, and can be used tens of times.