

The Contribution of Biomimetics to Address Global Challenges for Humankind

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One of the fascinating aspects of nanotechnology is that on the nanometer scale all the natural sciences meet and intertwine. Physics meets life sciences as well as engineering, chemistry, materials science and computational approaches, which altogether communicate and are closely linked. This inherent interdisciplinarity of nanotechnology offers enormous potential for fruitful cross-fertilisation in specialist areas.

A prominent research area at the meeting place of life sciences with engineering and physics is biomimetics. Biomimetic nanotechnology is a continuously growing field that deals with knowledge transfer from biology to nanotechnology. Investigations of animated nature on the nanoscale have wide-ranging implications for the understanding of processes in healthy and health impaired living beings and ecosystems and yield novel approaches in engineering and medicine. Biomimetic nanotechnology is a field that has the potential to drive major technical advances. It might substantially support successful mastering of major global challenges.

The Millennium Project was commissioned by the United Nations Secretary-General in 2002 to develop a concrete action plan for the world to reverse the grinding poverty, hunger and disease affecting billions of people. The Millennium Projects states 15 Global Challenges: sustainable development, water, population and resources, democratisation, long-term perspectives, information technology, the rich-poor gap, health, capacity to decide, peace and conflict, status of women, transnational crime, energy, science and technology and global ethics. For some of the 15 global challenges, biomimetic nanotechnology might provide relevant contributions that will be presented in more detail in the lecture.

References

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Biography

Prof. Dr. Ille C. Gebeshuber is expert in Nanotechnology and Biomimetics, with habilitation in Experimental Physics from the Vienna University of Technology.

Since 2009 she has been Full Professor at the Institute of Microengineering and Nanoelectronics (IMEN), Universiti Kebangsaan Malaysia. Her permanent professorship affiliation is with the Vienna University of Technology.

She is co-founder of TU BIONIK, the TU Wien Center of Excellence for Biomimetics, editor-in-chief of a new UK-based Professional Engineering Publishing journal bridging engineering, culture and society, associate editor of the UK-based Journal of Mechanical Engineering Science, editorial board member of various scientific journals and co-Editor of a biomimetics book by Springer Scientific Publishing.

She is highly active in Science Outreach and in bridging Science and the Arts. Her research interests are located at the interface of biology, engineering and the arts, systems thinking and nanotechnology.