

### **Biomimetic and Bio-Inspired Advanced Materials**

Ille C. Gebeshuber (1), Gloria Rose (2), Anna Pavlicek (2), André Gzásó (2)

- (1) Institute of Applied Physics, Vienna University of Technology, Vienna, Austria.  
[gebeshuber@iap.tuwien.ac.at](mailto:gebeshuber@iap.tuwien.ac.at)
- (2) Institute of Technology Assessment, Austrian Academy of Sciences, Vienna, Austria

This invited lecture explores bio-inspired and biomimetic nanomaterials, differentiating between bio-inspired or biomimetic nanotechnology and bionanotechnology. Following a clarification of these terms, the basics of bio-inspired and biomimetic nanomaterials are presented. Subsequently, a systematic classification of synthetic methods of bio-inspired and biomimetic nanomaterials is given, based on the method of manufacturing and not on the functionality of the materials. This enables a more coherent correlation with safety aspects, which are yet to be defined in many cases. Due to the great variety, a categorization according to material properties or material compositions is not considered practical. In addition to chemical properties, physical parameters such as size, structure and surface quality play an important role in the categorization. In summary, it can be said that bio-inspired and biomimetic nanomaterials represent important base materials as so-called functional advanced materials in research, development and industry – provided that the material development is accompanied by a corresponding safety and sustainability-oriented technology assessment.