

# Biomimetics: Innovative Engineering based on Biodiversity and Self-Organization

Masatsugu Shimomura

(Professor, Chitose Institute of Science and Technology,  
Professor Emeritus, Hokkaido University and Tohoku University, Japan)

## **Abstract**

Biomimetics is the innovative paradigm shift based on biodiversity for sustainability. Biodiversity is not only the result of evolutionary adaptation but also the optimized solution of “an epic combinatorial chemistry” for sustainable adaptation, because the diversity has been acquired by “biological processes and technology” including “production processes”, “operating principles”, and “control systems”, all of which are based on self-organization of life and ecological system. The comprehensive “technology transfer” from “biological diversity” to “human wisdom” is indispensable to open the new paradigm. Recent progress of the information science can transform the knowledge of natural history into the information of engineering.

Research area(s): Biomimetics, Nanotechnology, Polymer science