

STATISTICAL PHYSICS APPROACH TO BIOLOGICAL PHENOMENA

Wokyng Sung

Department of Physics, Pohang University of Science and Technology

Pohang 790-784, Korea

A new trend that emerges at the turn of the century is the physical approach to biological phenomena. It is expected that biology provides novel materials for condensed matter physics and, most importantly, a revolutionary paradigm for physics at large. On the other hand, physics, if properly extended, is expected to provide systematic and quantitative understanding of biological phenomena, and multitude of biotechnological applications. In this talk, I will introduce the biological systems described physically as soft and complex systems on mesoscopic scales, involving proteins (polymers) and membranes. Due to the complexity, flexibility and thermal fluctuation, there arises in these a variety of structural and dynamical transitions, which seem to be essential to biological functions. A theoretical method involved in analysis is the statistical physics of soft matter and stochastic processes.