

Special Issue

Emergent Collective Dynamics in Bioenergetic Molecular Systems

Message from the Guest Editors

This topic focuses on an exploration of the one of the most central challenges in bioenergetics—an understanding of molecular mechanisms underlying highly efficient energy generation, transfer and transformation in cellular processes such as photosynthesis, mitochondrial bioenergetics, and enzymatic energy metabolism. The rapid advances in this area are fostered by the application of experimental and theoretical approaches developed in solid, soft matter, nonlinear and active-matter physics which are being explored to understand the extremely effective function of living matter. The topic covers different aspects of emergent dynamics in molecular structures driven by energy pumping. The topic is not limited to these phenomena and seeks to encompass a wide spectrum of emergent collective dynamics in biosystems, which makes them extremely effective functioning active matter.

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