Electron transfer processes from the molecular to the cellular length scales

Spiros S. Skourtis

Department of Physics, University of Cyprus, Nicosia, Cyprus

Abstract:

Molecular electron transfer reactions are ubiquitous in chemistry and biology and are important in molecular electronics. In biology, biomolecular electron transfer chains are involved in signalling, in the creation and control of disease and are essential components of bioenergetic processes operating from the single-molecule to the cellular levels. Understanding the roles of molecular structure and dynamics on electron transfer mechanisms and connecting the single molecule (quantum mechanical) to the cellular (kinetic network) length scales is a grand project. I give a review of the current status of the electron transfer field and I discuss open questions and future challenges.

References

[1] S. S. Skourtis *Protein electron transfer* in Quantum Effects in Biology Cambridge University Press, M. Mohseni, Y. Omar, G. Engel, and M.B. Plenio, editors, July 2014, isbn: 9781107010802

[2] S. S. Skourtis *Probing electron transfer mechanism from the molecular to the cellular length scales* Special issue on "Peptide-mediated electron and energy transport" Biopolymers (Peptide Science) 100, 82-92 (2012)