Пленарные доклады

NEW GENERATION CHROMOPHORES AND FLUOROPHORES FOR PHOTODYNAMIC THERAPY AND OTHER BIO-MEDICAL APPLICATIONS

E. Benassi

School of Science and Technology, Nazarbayev University
010000, Astana, Qabanbay Batyr Ave 53, enrico.benassi@nu.edu.kz

In the last three decades, enormous efforts have been spent to design, synthesise and characterise organic, small-size chromophores and fluorophores. Bioimaging, sensing, and photodynamic therapy are just a few examples of the numerous fields of contemporary applications of such molecules. The daily growing number of publications attempts to address the key requirements that chromophores and fluorophores must match for bio-medical applications, such as the high absorbing / emitting capability, high solubility in biological environment, photo- and thermostability, sensitivity to the environment and selectivity to the defined target. Moreover, when employed in humans, these compounds need to be non-harmful, that means they must have negligible cytotoxicity, rapid clearance from the body post-procedure, and working in a suitable (low-energy) radiation interval.

The aim of this lecture is that of sharing a summary of recent results [1–15] on new classes of chromophores and fluorophores designed for bio-medical applications. Both experimental and computational-theoretical findings will be shown and discussed. In particular, the state-of-the-art in terms of quantum mechanical methods for the investigation of optical and nonlinear optical properties of these types of systems will be presented in detail.

References

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