

Title:

Time-Resolved Fluorescence of Protoporphyrin IX

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Abstract:

The bachelor thesis deals with concentration dependence of endogenous photosensitizer Protoporphyrin IX fluorescence lifetimes in model solutions in THF and DMSO using time-correlated single photon counting technique. Protoporphyrin IX represents a photosensitizer utilized in photodynamic therapy and photodiagnosis of oncologic and other chronic diseases. It is naturally occurring precursor in biosynthesis of heme in cells. Biologically relevant concentration ranges of Protoporphyrin IX were investigated. Increasing lifetimes with increasing concentrations of Protoporphyrin IX were found both in THF and in DMSO. The increase from 8.85 ns to 9.22 ns in the former is under 3% experimental uncertainty. The increase from 9.96 ns to 12.29 ns is well over the uncertainty in the case of DMSO.

Keywords:

fluorescence, TCSPC, Protoporphyrin IX