



## Time-resolved fluorescence intensity issued from a heterogeneous slab: Sensitivity characterization

Submitted by Emmanuel Lemoine on Thu, 01/30/2014 - 14:35

Titre Time-resolved fluorescence intensity issued from a heterogeneous slab: Sensitivity characterization

Type de publication Article de revue

Auteur Kervella, M. [1], Humeau-Heurtier, Anne [2], L'Huillier, Jean-Pierre [3]

Type Article scientifique dans une revue à comité de lecture

Année 2008

Langue Anglais

Date 2008/12/15

Numéro 24

Pagination 5982 - 5990

Volume 281

Titre de la revue Optics Communications

ISSN 0030-4018

Mots-clés Bean-shaped [4], Biodistribution [5], Finite [6], fluorescence [7], Numerical [8], Time-resolved [9]

Résumé en anglais  
Optical imaging using fluorescent contrast agents has become an interesting tool to differentiate diseased lesions from normal tissue. However, several sensitivity characterizations may strongly influence the time-dependent fluorescence measurements. Herein, we present a numerical model based on the finite element method that allows the simulation of time-resolved reflectance and transmittance signals from heterogeneous media mimicking breast tissues with an embedded fluorescent object (tumor). The influence, on the computed signals, of several tumor depths, as well as various fluorophore concentrations and several fluorescent markers targeting are analyzed. The results show the possibility of uncoupling location depth from the shape of the target. Therefore, the analysis of the time to reach half the maximum intensity is validated as a good localization scheme. Then, the transmitted data show that the maximal detected intensity at the bottom of the medium is very sensitive to the dye concentration but not to the tumor shape. Moreover, the strong competition between concentration determination and fluorophore distribution is presented. These results will lead to a better detection and localization of tumors.

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DOI [10.1016/j.optcom.2008.09.010](https://doi.org/10.1016/j.optcom.2008.09.010) [11]

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