OBTAINING INFORMATION AT THE MOLECULAR LEVEL WITH MESOSCOPIC FLUORESCENT MEASUREMENTS

Jorge Ripoll Lorenzo Inst. of Electronic Structure & Laser Foundation for Research and Technology-Hellas (FORTH) P.O. Box 1527, Vassilika Vouton 71110 Heraklion, Crete email: jripoll@iesl.forth.gr

During the past two decades great effort has been directed towards directly imaging molecules mainly with scanning probe methods. New advances in detector sensitivity and sample movement accuracy are now enabling direct imaging at the nanometer scale, in many cases combining several modalities (optical/AFM, for example). On the other hand, a new field has recently emerged termed "molecular imaging", which obtains information from molecular processes by using probes that activate or change state in the presence of a particular molecular function. With this new techniques, originaly developed within the medical community, it is possible to obtain information of molecular processes from measurements that do not have molecular resolution. In this work we shall present results from a custom-made setup that provides tomographic images of fluorophore concentration in-vivo, from which we may infer molecular events from mesoscopic fluorescent measurements. The basis of the theoretical implementation and some experimental results will be detailed.