

## **Dynamic behaviour of Verteporfrin in liposome solution after multiphoton excitation**

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The photochemistry of Verteporfin (VP) in liposomal solutions of dioleoyl-phosphatidylcholine (DOPC) and 1,2-Dipalmitoyl-sn-Glycero-3-Phosphocholine (DPPC) has been examined using near infrared two-photon excitation (NIR-TPE). In combining liposomal drug delivery with NIR-TPE, a photodynamic therapy with reduced toxicity and highly localized light dosage can be achieved respectively. The use of a novel liposomal optical trapping protocol allowed for the survey of a heterogeneous solution with a focal volume on order of  $\sim 1\mu\text{m}^3$ . This technique proved most efficient for isolating liposomes whose diameter approached that of the focal width ( $\sim 0.5\mu\text{m}$ ). Fitted data revealed that in the model solution ( $1.0\text{ mg lipid}:0.01\text{ mg VP mL}^{-1}$ ) a double exponential decay function best described the observed photobleaching dynamics. The photobleaching rate constants calculated for DOPC and DPPC will be discussed as well as the rate constants determined in the absence of oxygen.