

Abstract Submitted  
for the TSF05 Meeting of  
The American Physical Society

**Binding of Two Photoactive Molecules to Tubulin** LORENZO BRANCALEON, FANG TIAN, Department of Physics and Astronomy, UNiversity of Texas at San Antonio — The interaction of Tubulin with two porphyrin dyes, meso-terakis(p-sulfonatophenyl)porphyrin (TSPP) and protoporphyrin IX (PPIX), were studied by steady-state and dynamic fluorescence spectroscopy. The shifts of TSPP and PPIX emission maximums upon excitation at 405 nm and 420 nm, respectively, and the increases of the fluorescence intensity are indicators that bindings between the tubulin and the porphyrins occur. The static quenching caused by porphyrin on the protein's tryptophan yield constants of  $1.7 \times 10^5 \text{ M}^{-1}$  and  $5.4 \times 10^4 \text{ M}^{-1}$  for tubulin-TSPP and tubulin-PPIX respectively. Double logarithmic plots yield a single binding site for the two complexes while the dissociation constants is  $6.9 \times 10^{-7} \text{ M}$  for tubulin-TSPP and of  $7.8 \times 10^{-7} \text{ M}$  for tubulin-PPIX. Fluorescence Anisotropy Decay confirms the binding of both porphyrins to tubulin. Both porphyrin show a fast correlation time ( $<300 \text{ ps}$ ) which is due either to remaining free porphyrin in solution or to some rotational freedom within the binding site. The longer correlation time appears to be shorter for TSPP (10 ns) than for PPIX (17 ns). The result present the first study of the molecular interaction between porphyrin and tubulin despite the fact that such interaction was first observed almost ten years ago.

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Date submitted: 15 Sep 2005

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