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**Direct Comparison of one-photon and two-photon cross-sections of chromophores by low power ps laser.** WEI-LUNG LEE, JUI-HUNG HSU, National Sun Yat-sen University — Two photon absorption is generally interested for its basic photophysics and nonlinear optical application. In particular, fluorescence excited by two-photon processes attracts much attention for the sensitive fluorescence detection. However, due to the strong power dependence of the two-photon processes, many two-photon fluorescence experiments require high peak power laser as an excitation source. We present a study of direct fluorescence intensity comparison of 532 nm /1064 nm low power pulse laser excitation. The sample was inserted on an inverted optical microscope equipped with a high numerical aperture oil-immersed objective. Switching between two optical paths allows us to directly compare one-photon and two photon excitation processes within good accuracy. Low power/ high rep. rate scheme provides low damage/ high stability capability. Direct comparison between one-and two- photon excitation processes allow us to take advantage of the easily determination of one-photon excitation coefficients. The comparison can be further extended into tunable light source, such like fs Ti:S laser for the wavelength dependence of two photon cross-section studies.

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