

Two- and three-photon absorption in fluorescent proteins and their chromophores

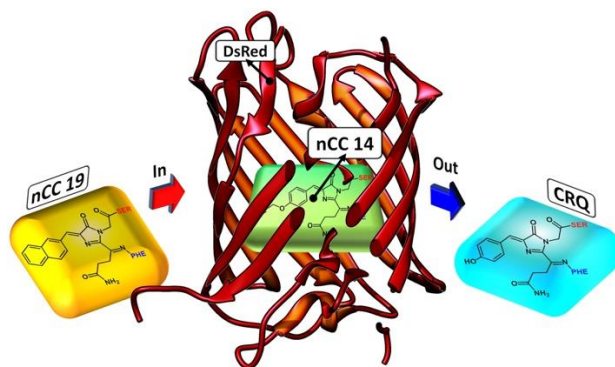
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Abstract

I will discuss our recent research examining the photophysical properties of fluorescent proteins (FPs) and their chromophores [1-6], with an emphasis on the determination of two- and three-photon absorption (2PA and 3PA, respectively) cross-sections; so-called multi-photon absorption (MPA) cross-sections. I will introduce MPA including the use of two- (or few-) level models for interpreting MPA cross-sections, based on transition dipole moments (oscillator strengths), permanent dipole moments, and excitation energies. I will highlight our recent work computationally exploring MPA in FP chromophores and FPs incorporating non-canonical amino acids (ncAAs) using both quantum mechanical and quantum mechanical/molecular mechanical (QM/MM) tools. I will also emphasize differences between degenerate and non-degenerate 2PA in FP chromophores.



References

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