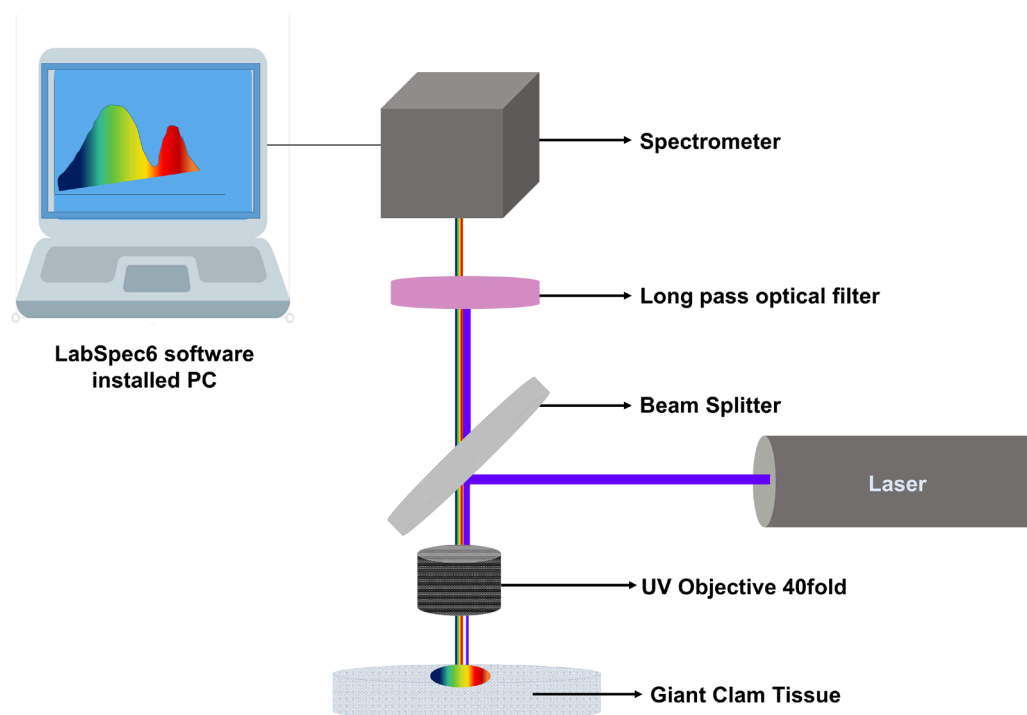
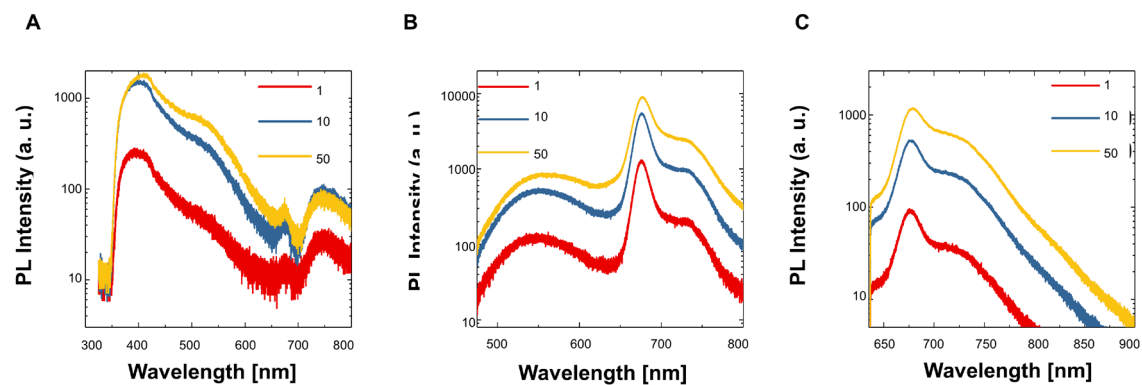


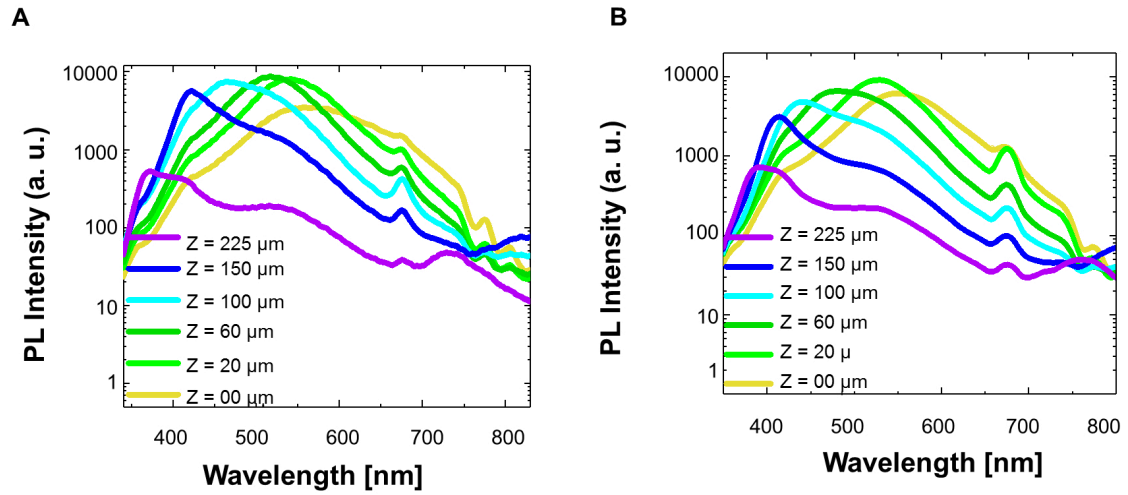
SUPPLEMENTARY FIGURES



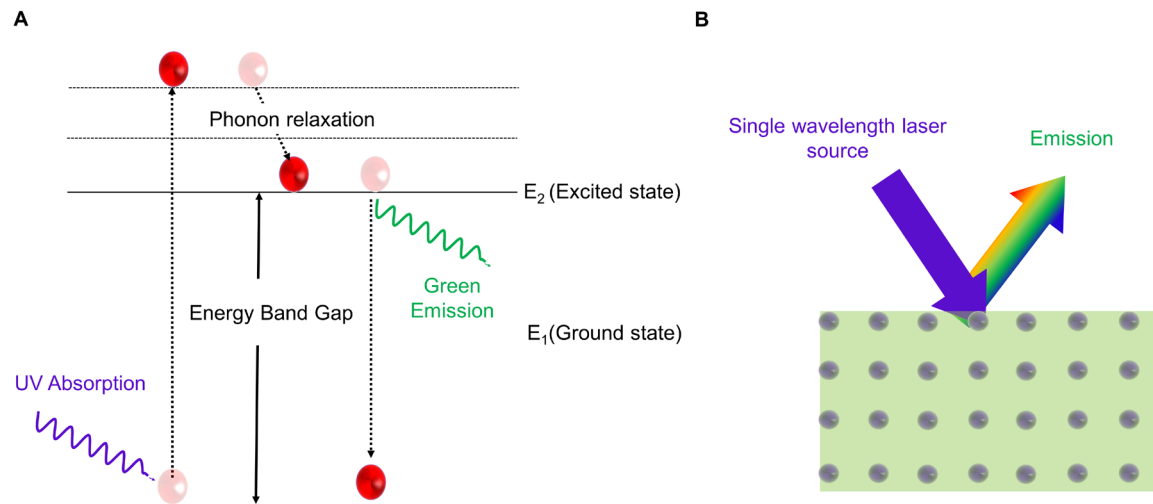
Supplementary Figure 1. Illustration of experimental setup including Labram Aramis setup, PC with LabSpec6 software and a laser.



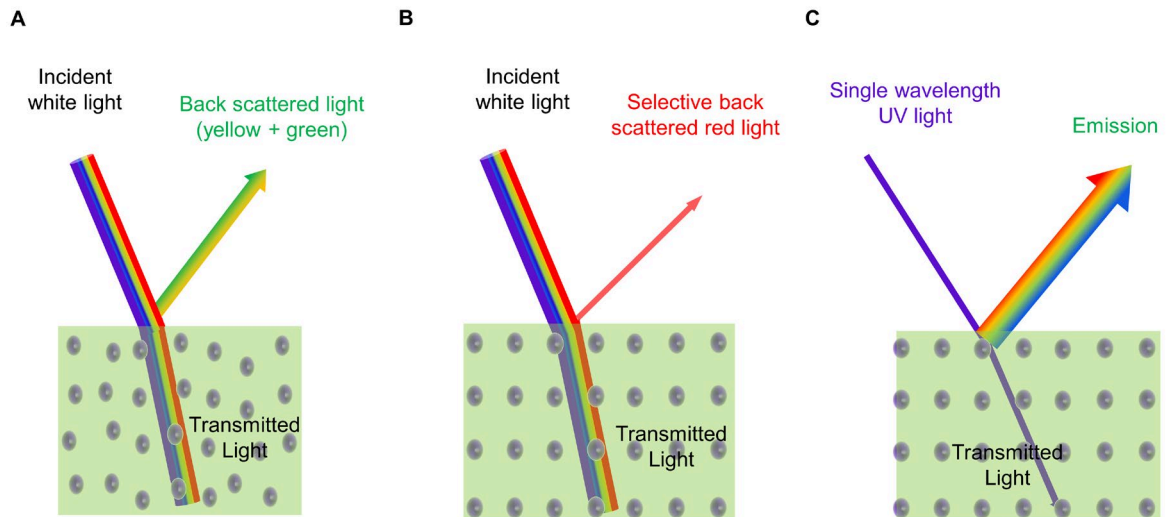
Supplementary Figure 2. Power dependent photoluminescence of giant clam with different excitation source (A) 325nm, (B) 473nm and (C) 633nm. PL intensities at 1, 10 and 50μW for 325nm and 633 nm, as well as at 1, 10 and 100μW for 473nm.



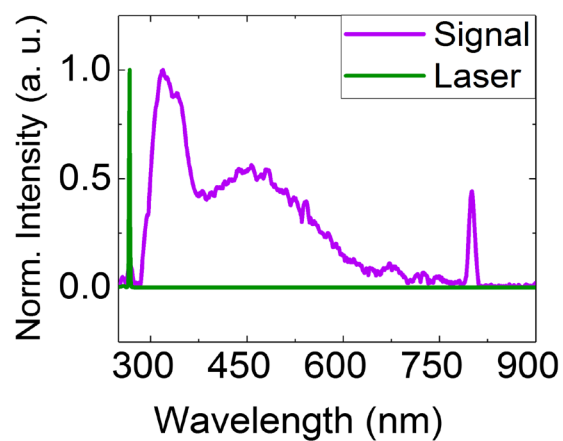
Supplementary Figure 3. Focal depth PL spectra of *T. maxima* at different focal depth (Z), when optically excited by pulsed laser UV laser (325nm). PL spectra are exemplarily shown for focal depths directly at mantle surface (Z = 0) to 225μm deep inside the tissue. (A) *T. maxima* specimen with brown-coloured mantle (B) *T. maxima* specimen with blue-coloured mantle.



Supplementary Figure 4. (A) Schematic illustration of absorption and emission mechanism using an energy band diagram. (B) Illustration of UV source absorption and broadband emission (red - blue).



Supplementary Figure 5. Back scattered light by (A) a crystal (less ordered), (B) a highly ordered crystal structure, (C) absorption of a single wavelength UV light resulting emission of longer wavelengths (red - blue).



Five observations for Quantum Yield:

39, 35 42, 37, 43

Mean: 39.20

SD: 4.16

Quantum Yield: 39.20 ± 4.16

Supplementary Figure 1. Quantum yield observations in *T. maxima*, normalized laser and PL spectra.