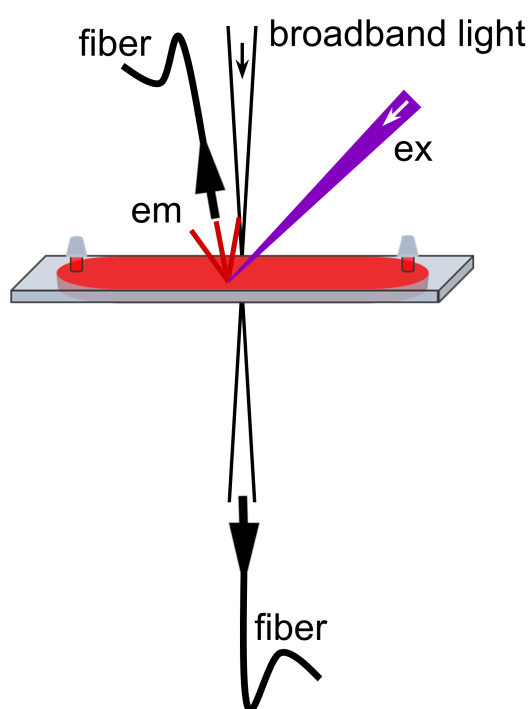
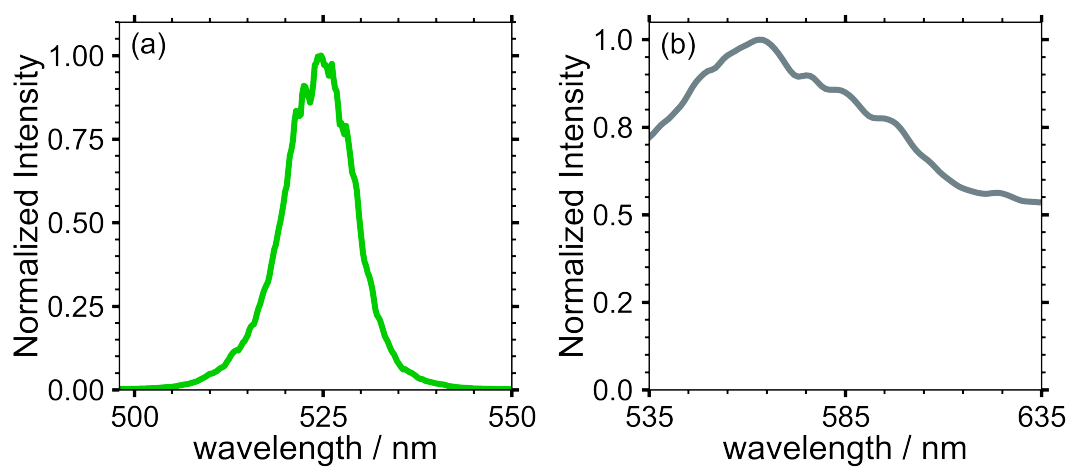


## Supplementary Material



**Figure S1.** Schematic showing arrangement of light sources and collection fibers for absorbance and fluorescence measurements. Broadband light from a tungsten-halogen lamp (Thorlabs, SLS201) was focused into the sample cuvette and the transmission collected using a fiber optic cable (Thorlabs, M28L01). A 405 nm laser (Thorlabs, CPS405) was used as the fluorescence excitation source (ex). Emitted light (em) is collected with a fiber optic cable (Thorlabs, M95L01) angled to avoid scatter from the excitation source.



**Figure S2.** (a) Spectrum of pump pulses used in single-shot transient absorption measurements. (b) Spectrum of broadband probe across the measured wavelength range.