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Fluorescence Dynamics Utilizing Fluorescence OPA FROG COLLEEN WOODWARD, NANCY LEVINGER, Colorado State University — It has been demonstrated that fluorescence can be amplified by use of optical parametric amplification (OPA). By then using the FROG (Frequency Resolved Optical Gating) technique, fluorescence dynamics can be measured on an ultrashort timescale. This technique has several attractive features compared to current state-of-the-art fluorescence upconversion because it has the potential to amplify weak fluorescence, detection occurs at the wavelength of the fluorescence signal in the visible or near IR spectral region and the phase-matching condition is $\vec{k}_{pump} = \vec{k}_{signal} + \vec{k}_{idler}$. We will demonstrate time gating, effective amplification of fluorescence, and the dependence on concentration, and its effectiveness for resolving the stokes shift for common fluorescent dyes.

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