Supporting Information

Label-free Optical Microscope based on a Phase-modulated Femtosecond Pump-probe Approach with Sub-diffraction Resolution

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Figure S1. Comparison of laser intensity distribution at the focal plane when it is a) circularly and b) linearly polarized. The simulation results in a uniform distribution of intensity when the polarization is set to circular before the objective.
Figure S2. Calibrating the power ratios for the two pumps on varying the toroidal pump power ($I_d$) with respect to the fixed Gaussian pump power ($I_g = 3$ mW) and measuring the nanoparticle ZnO. These data can also be fitted to an empirical equation shown in the figure for fine adjustment of the toroidal pump power over the gaussian pump power. $x$ in the model equation represents the values of ratio $I_d/I_g$ and $A$ and $B$ are arbitrary parameters for the fit.

$$\alpha \frac{1}{(1 + Bx^A)}$$

$A = 1.2$

$B = 0.012$

Figure S3. a) Line profile of three nanoparticles shown in Figure 3c of the text without the toroidal pump; b) line profile of the same three nanoparticles shown in Figure 3d of the text with the toroidal pump. The nanoparticles are distinguishable from one another after applying the toroidal pump as shown in b) and Figure 3d.