**SUPPLEMENTARY INFORMATION**

1. **Analysis of Cell Heating by Light:**

We use the diffusion partial differential equation to describe the heating of a water-based particle within an aqueous medium:



where  is the sample temperature,  is the thermal diffusivity constant (), and  is the rate of local heating given by[[1-4](#_ENREF_1)]



where ,  is the absorption coefficient of the media (),  is the incident light power,  is the radius of the focused incident light,  is the radial distance from the axis of light propagation,  is the density of the media ( ), and  is the specific heat of the media ().

Because we are interested in the maximum local heating, we can set , as the maximum light intensity is at the center of the focused beam. Then, the closed-form solution of the above differential equation is:



**References:**

1. Axelrod D (1977) Cell surface heating during fluorescence photobleaching recovery experiments. Biophys J 18: 129-131.

2. Pope RM, Fry ES (1997) Absorption spectrum (380-700 nm) of pure water. II. Integrating cavity measurements. Appl Opt 36: 8710-8723.

3. Ebbesen CL, Bruus H (2012) Analysis of laser-induced heating in optical neuronal guidance. J Neurosci Methods 209: 168-177.

4. Liu Y, Cheng DK, Sonek GJ, Berns MW, Chapman CF, et al. (1995) Evidence for localized cell heating induced by infrared optical tweezers. Biophys J 68: 2137-2144.