

1 Supplementary Information for
2 **Highly Efficient Three-dimensional Optical**
3 **Condensation of Microbes Using a Gold-coated**
4 **Optical Fibre Module**

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Supplementary Movie 1. Optical condensation of polystyrene particles (diameter: 1 μm) with an optical fibre module positioned at a considerable distance from the substrate (Real time). Laser irradiation started at 5 s after the movie started, and stopped after 60 s irradiation. The diffusion process of particles can be observed after stopping laser.

Supplementary Movie 2. Optical condensation of polystyrene particles (diameter: 2 μm) an optical fibre module positioned on the substrate (Real time). Laser irradiation started at 5 s after the movie started, and stopped after 60 s irradiation.

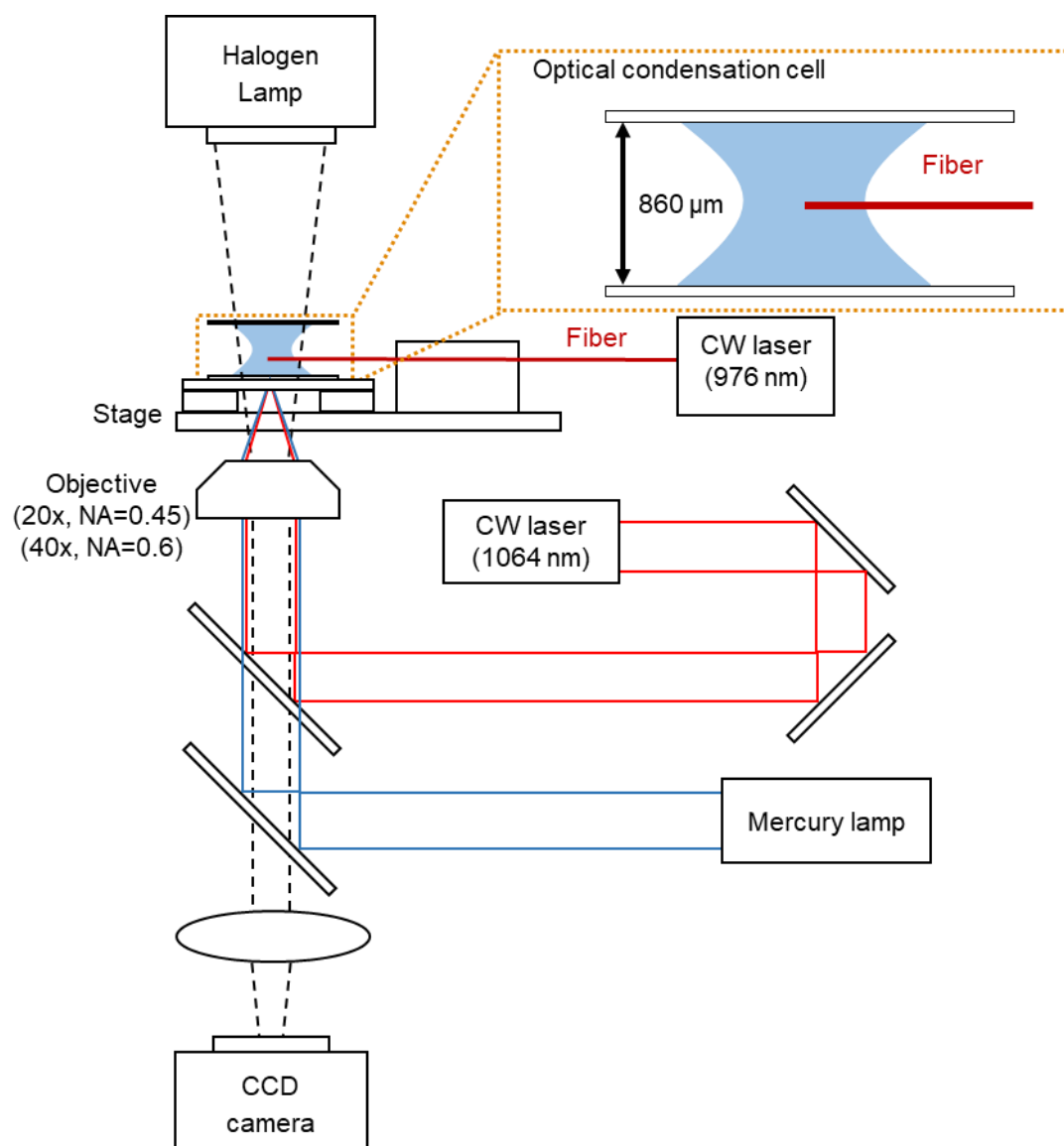


Fig. S1: Schematic of optical system for optical condensation.

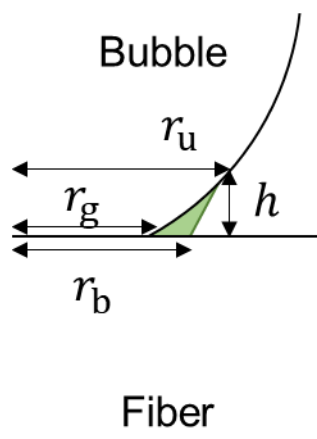


Fig. S2 Geometry of calculation model for the estimation of the number of assembled particles and assembly efficiency.

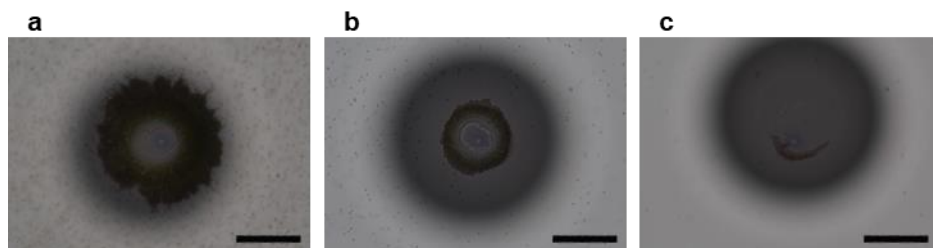


Fig. S3 Transmission images of optical condensation of 1 μm polystyrene particles on a gold-coated substrate at 60 s as comparable experiments. Concentrations: (a) 4.55×10^8 , (b) 4.55×10^7 , and (c) 4.55×10^6 particles/mL. Scale bar: 50 μm

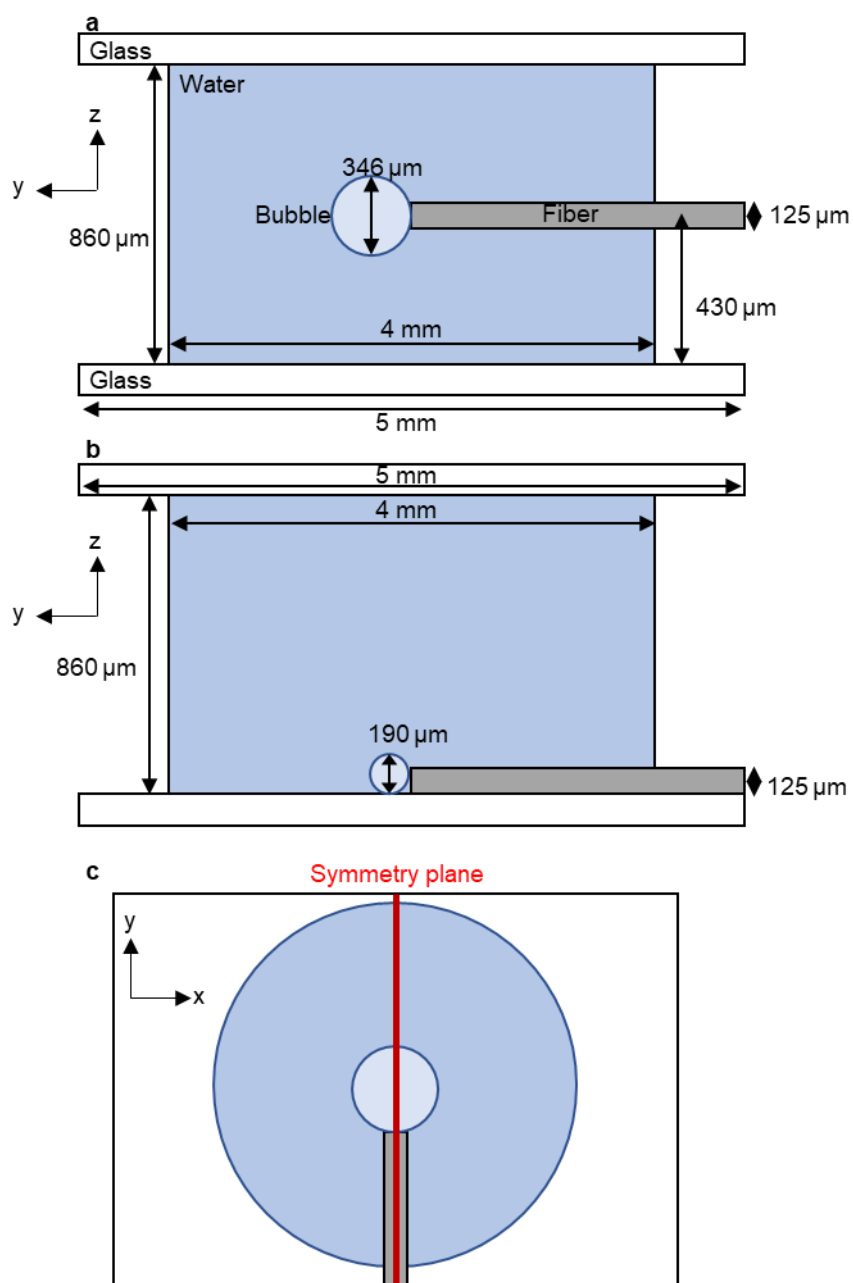


Fig. S4 Simulation model of COMSOL Multiphysics. Fibre model placed (a) at the centre of the observation microwell and (b) on the substrate (side view). (c) top view of the model.

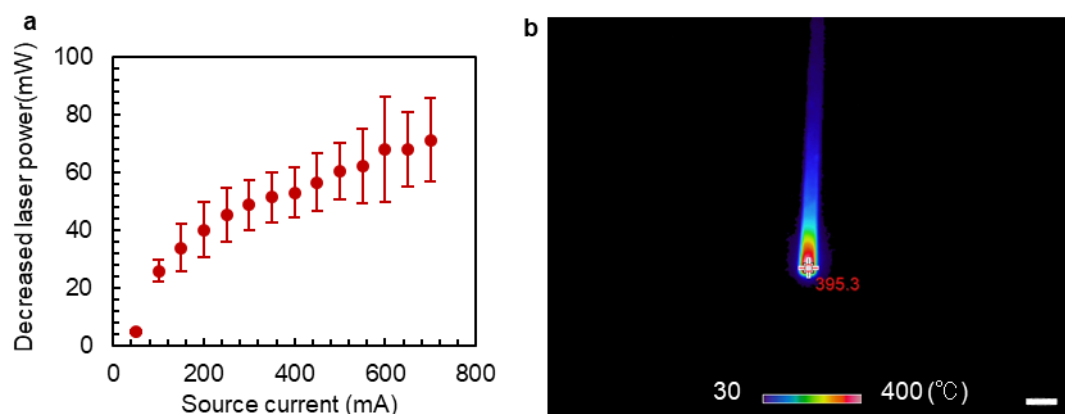


Fig. S5 Experimental value of decreased laser power and temperature. (a) The decreased laser power at the tip of the gold-coated fibre measured by a laser power meter. Error bar: standard deviation. (b) Experimental result of the thermography on the gold-coated fibre with laser irradiation at 320 mW. Scale bar: 250 μm .