Electronic Supplementary Material (ESI) for Lab on a Chip

Slab waveguide photobioreactors for microalgae based biofuel production

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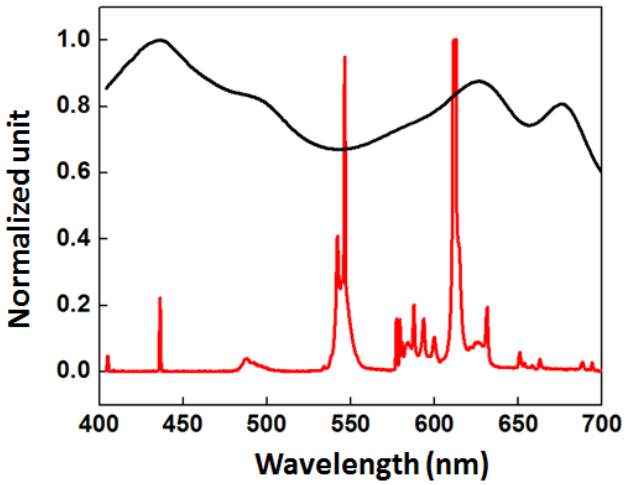

Fig. S1 | Emission spectrum of the fluorescent lamp used in experiments (red) and absorption spectrum of *S. elongatus* (black)[1]. The fluorescent lamp used here for direct illumination has a broad emission spectrum ranging from 400 to 700nm. To compare the power of the lamp to that of the laser, the relative power of the lamp at 660nm was calculated by multiplying the photon flux to the photon energy at each wavelength (*i.e.* relative emission spectrum of the lamp) and converting the integrated value of the relative emission spectrum to the radiometric unit (W/m^2) at 660nm. The absorbed power of the lamp was then calculated by multiplying the relative emission spectrum to the absorption spectrum of the bacteria. The absorbed power of the laser illumination was calculated by multiplying the absorption efficiency (0.748 at 660nm) to the measured absorbed power at 660nm.

1. M. D. Ooms, V. J. Sieben, S. C. Pierobon, E. E. Jung, M. Kalontarov, D. Erickson and D. Sinton, Physical chemistry chemical physics : PCCP, 2012, 14, 4817-4823