**Supplementary material**

CMBR

Collimated Beam

Figure S1 | Schematic diagram of a flat-plate collimator, with a collimated beam towards a continuously mixed batch reactor (CMBR). Note: The CMBR is a suspension contained in a polystyrene Petri dish and the top of the Petri dish is uncovered to avoid absorbance of the lid.

**Table S1** **|** Information about the Petri dish

|  |  |  |
| --- | --- | --- |
| Top Petri dish diameter | 5.1 | cm |
| Top Petri dish area | 20.43 | cm2 |
| Sample depth | 0.8 | cm |
| Material | Polystyrene |  |

**Calculation of average intensity**



where:

|  |  |
| --- | --- |
| n air | 1.0003004 |
| n water | 1.3763555 |

*Io*: Intensity measured right at the top of the suspension

*d*: sample depth

*α:* Absorbance (1 - transmittance)

*n*: The refractive index

Transmittance of the suspension: 97.5%, 98.2%, and 98.5% of radiation is transmitted for 297 nm, 310 nm, and 320 nm, respectively.

**Table S2** | Intensity (output of filter) values that were measured at the surface level of suspension (CMBR)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **297 nm** | **310 nm** | **320 nm** |
| MS2 and T4 | 1.4–2.4 (\*10-5 W/cm2) | 2.09 (\*10-5 W/cm2) | 0.6 (\*10-5 W/cm2) |
| *E. coli* | 1.4–3.55 (\*10-5 W/cm2) | 6.55 (\*10-5 W/cm2) | 1.36 (\*10-5 W/cm2) |

Note: The lamp could vary day to day, and after the switch was turned on, we waited for the output to be stable. Monochromatic filters used have different transmittance (Figure 1 in main text).

Table S3 | Exposure times and sampling (from CMBR) frequency (UVA and UVB) for *E. coli*

|  |  |  |
| --- | --- | --- |
| 297 nm | 310 nm | 320 nm |
| 10 min | 20 min | 1 hr |
| 20 min | 40 min | 2 hr |
| 30 min | 1 hr 20 min | 3 hr |
| 45 min | 2 hr | 3.5 hr |
| 1 hr | 3 hr |  |
| 2 hr |  |  |
| 3 hr |  |  |

Table S4 |Exposure times and sampling (from CMBR) frequency (UVA and UVB) for MS2 and T4

|  |  |  |
| --- | --- | --- |
| **297 nm** | **310 nm** | **320 nm** |
| 1 hr | 1 hr | 1 hr |
| 2 hr | 2 hr | 2 hr |
| 3 hr | 3 hr | 3 hr |

Note: 1. Each experiment was done in triplicate. 2. Doses are products of exposure times and average intensity.