Electronic Supplementary Material (ESI) for Analyst.

Enhanced fluorescence detection of nitroaromatic compound using bacteria embedded in porous poly lactic-co-glycolic acid microbeads

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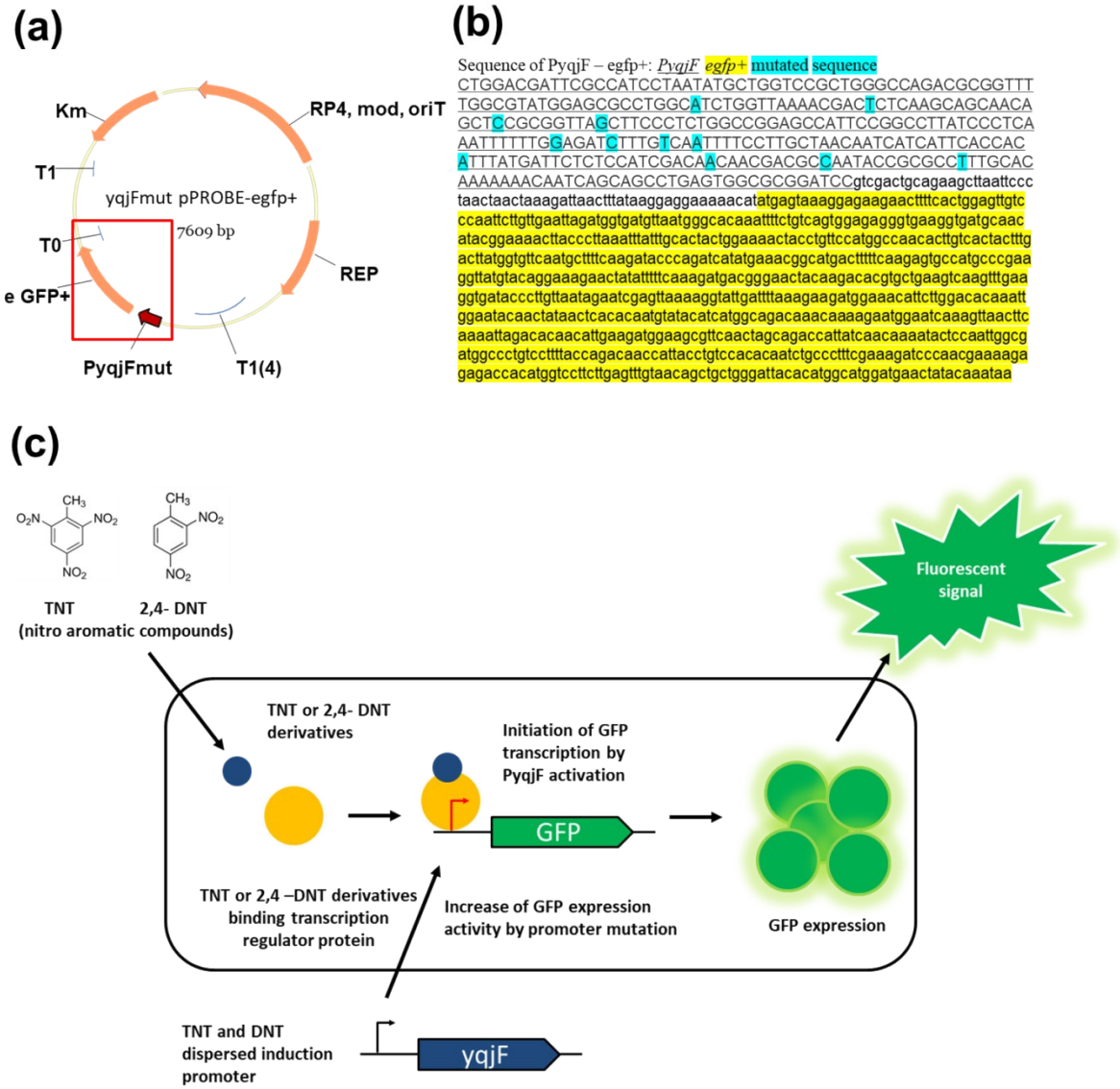

Fig. S1. The structure of genetically engineered plasmid and mutated sequence information (a) Structure of the plasmid of nitroaromatic sensitive bacteria (E. coli MG1655 with pPROBE -$P_{yqjFmut}$-*gfp*+)(b) Sequence of PyqjF – egfp+ (including mutated sequence) (c) Sensing mech anism of nitro aromatic compound inducible promoter-based biosensor

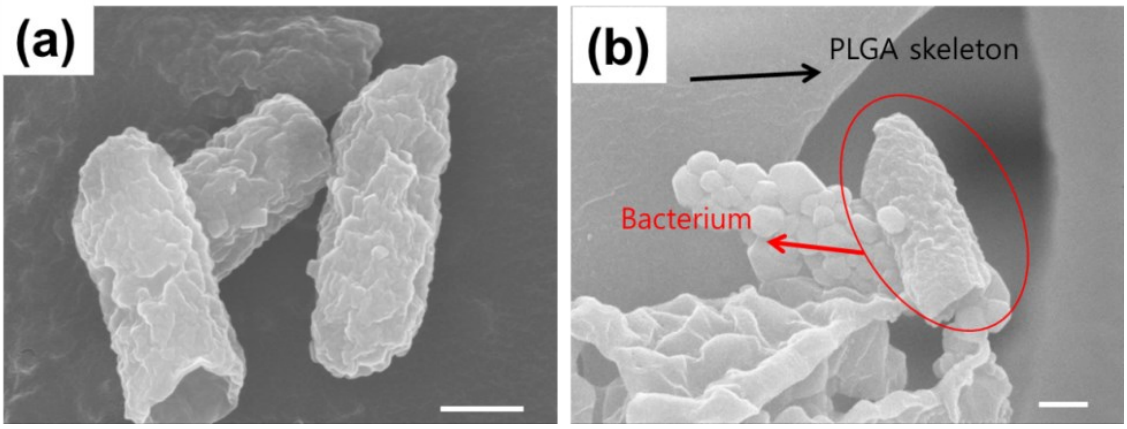

Fig. S2. SEM images to show morphology of fluorescent bacteria (a) and SEM images to sh ow existence of fluorescent bacteria on PLGA skeleton (b). Scale bars represent 500 nm

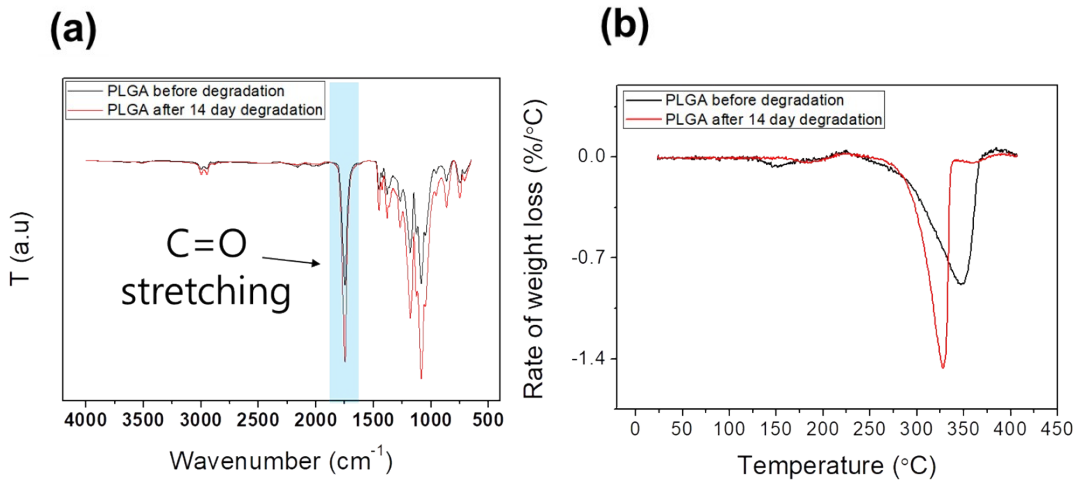

Fig. S3. The degradation behavior of open porous PLGA microbeads in PBS.
(a) The FTIR spectra of porous PLGA microbeads before and after 14 day degradation. (b) T he derivative of TGA curves of open porous PLGA microbeads before and after 14 day degr adation.

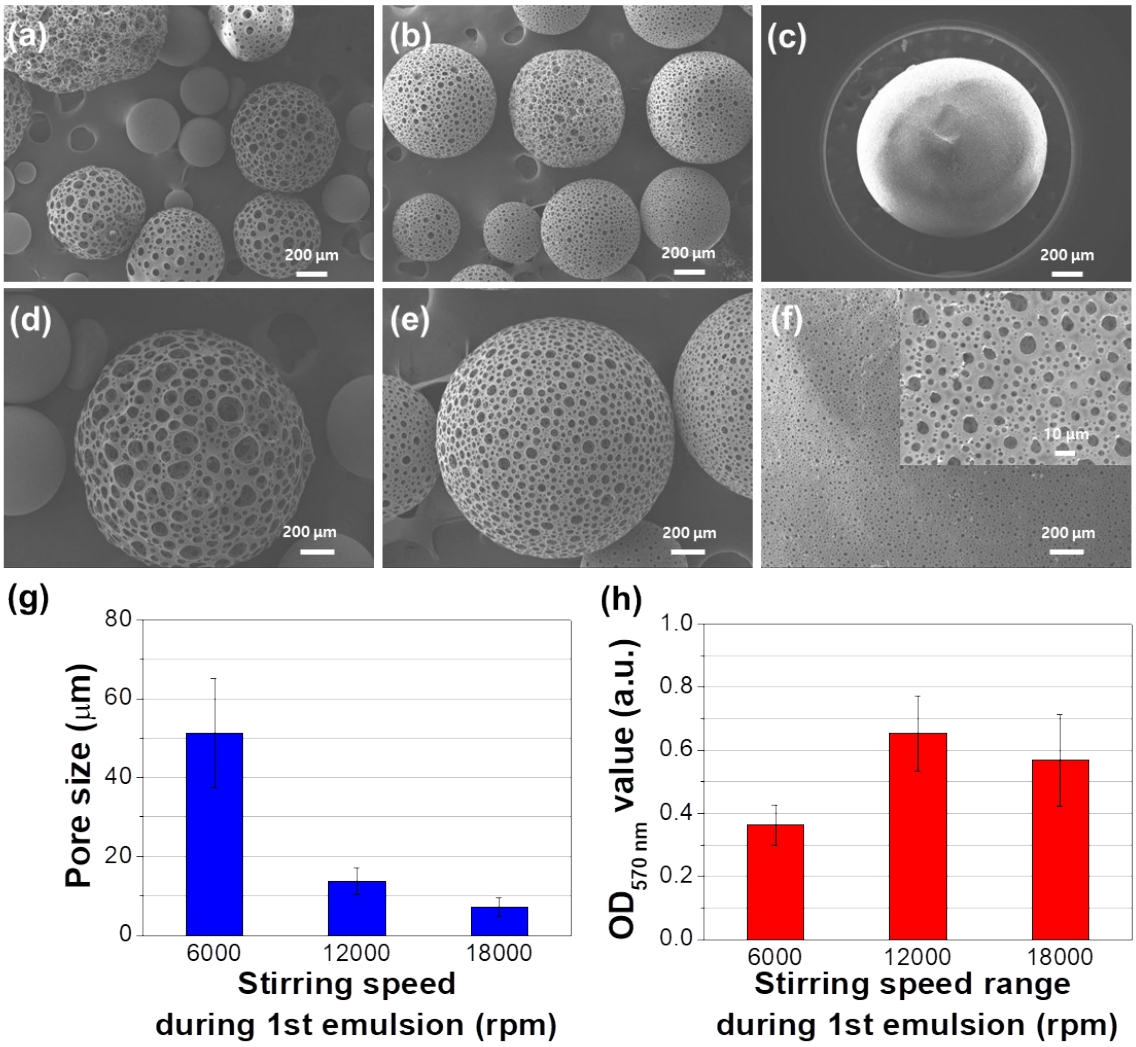

Fig. S4. The different morphology and bacteria adhesion property of PLGA micrbeads as a f unction of the 1st stirring rpm.

The morphology of PLGA microbeads with 6000 1st rpm (a) ,12000 1st rpm (b) and 18000 1 st rpm (c), respectively. And (d),(e)and (f) are the relatively high magnification image of (a),(b) and (c), respectively.(g) is the average pore size of porous PLGA microbeads as a functio n of stirring speed during 1st emulsion. (h) The OD $_{570nm}$ value of PLGA microbeads after ba cteria incubation as a function of stirring speed during 1st emulsion.

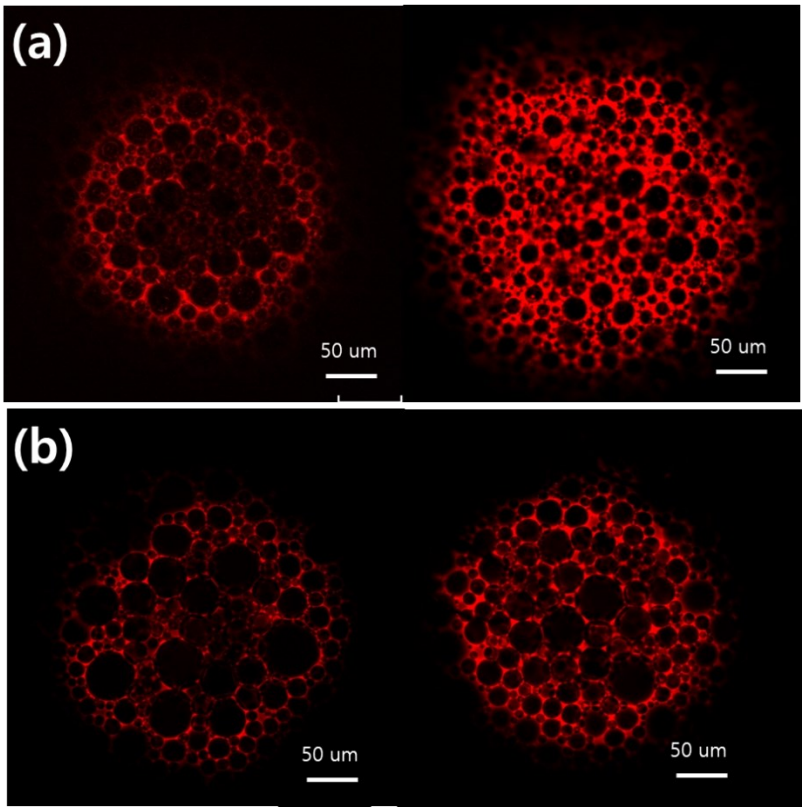

Fig. S5. The CLSM morphology of the cross-section of PLGA microbeads with W/O ratio= 1:3.5 (a) and W/O ratio= 1:2 (b). Rhodamine B was used as the dry for CLSM and the exci tation filter and emission filter was set up as 540 nm and 580 nm.

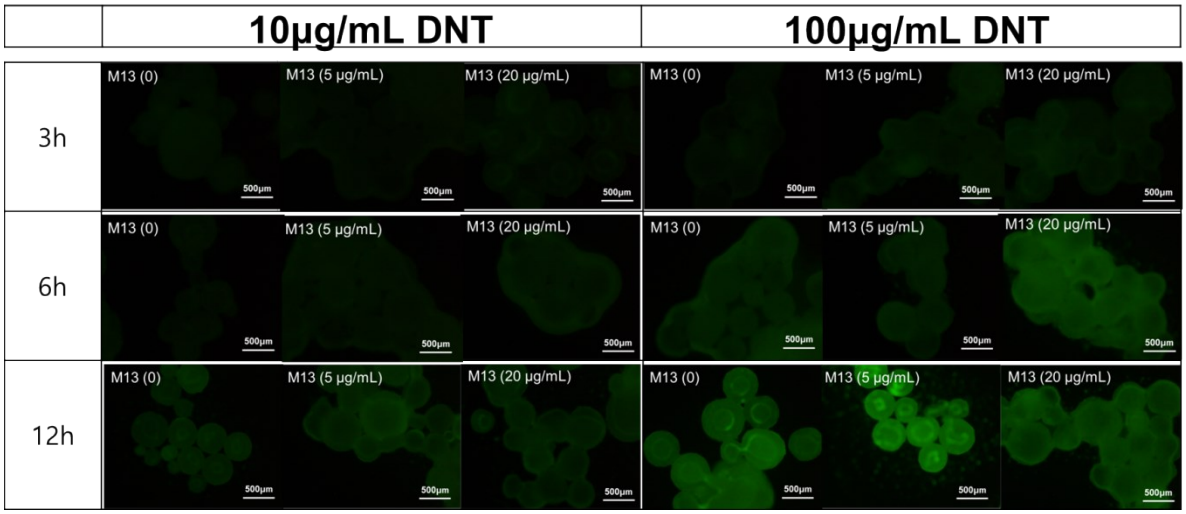

Fig. S6. Fluorescence mode OM images of open porous PLGA microbeads attached with nitr oaromatic sensitive bacteria with 5 μg/mL, 20 μg/mL and without M13 bacteriophage in DNT solution.