

Table S1. The standard curves of qPCR

Gene	Standard curve	R ²	Amplification efficiency/%
<i>tetA</i>	$y = -3.0876x + 39.05$	0.9985	110
<i>bla</i> _{TEM}	$y = -3.1115x + 38.626$	0.9904	109
<i>aph</i> (3')-Id	$y = -3.2168x + 39.788$	0.9938	105
16S rRNA	$y = -3.1678x + 45.778$	0.9947	107

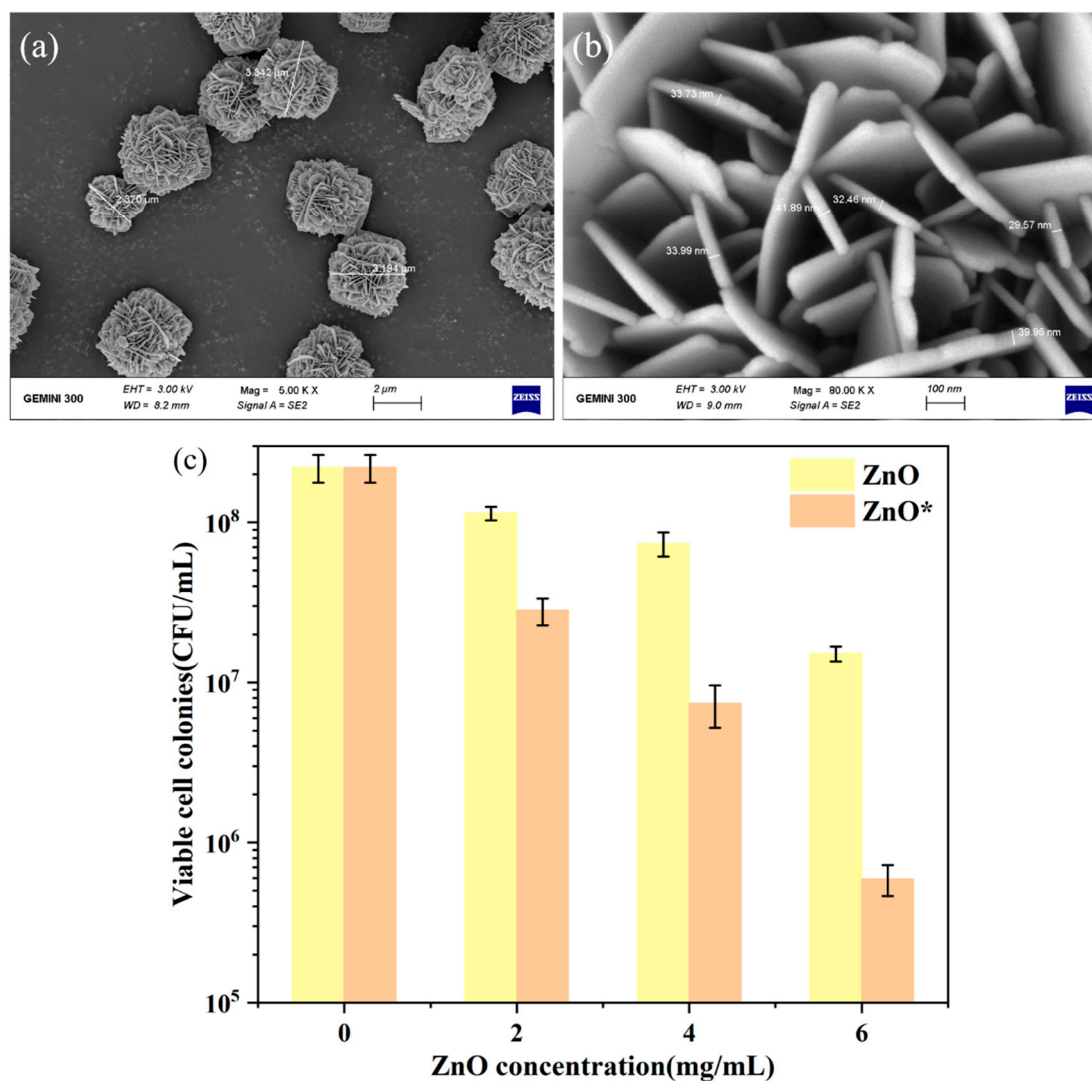


Figure S1. (a) SEM image and (b) enlarged view of the as-prepared hierarchical ZnO nanoflowers.

(c) The antibacterial property of synthesized ZnO (ZnO* = ZnO nanoflowers).

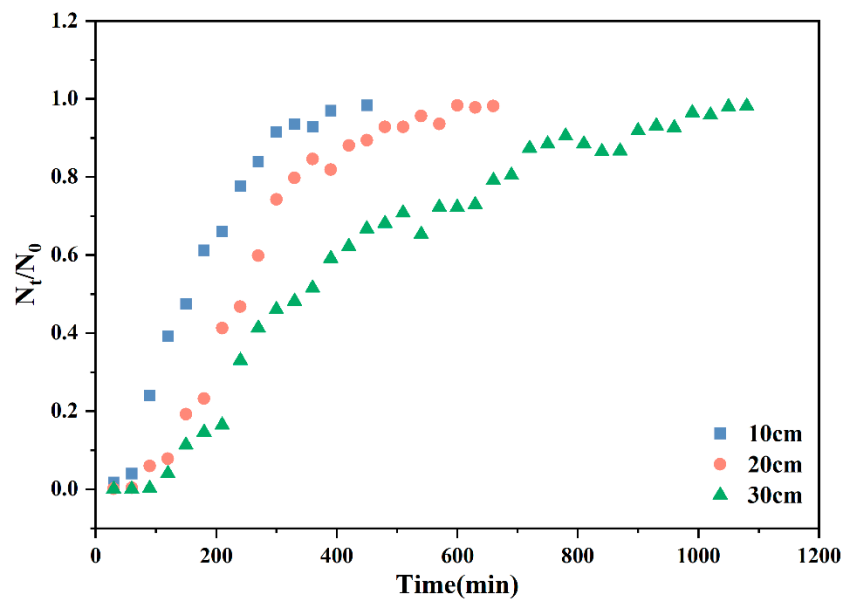


Figure S2. Breakthrough curves of the composite beads during ARB removal at different bed depth (Initial bacterial concentration = 106 CFU/mL; flow rate = 1 mL/min);

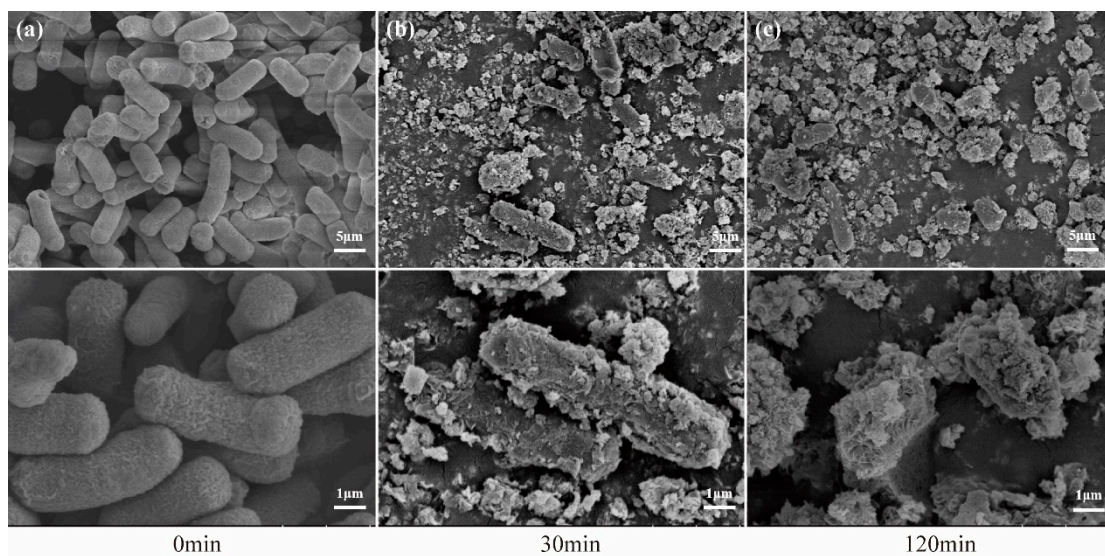


Figure S3. SEM images of *E.coli* HB101 after treatment for different time. (a) 0min, (b) 30min and (c) 120min.