

Supplementary Information

Broad-spectrum antimicrobial activity of ultrafine $(\text{BiO})_2\text{CO}_3$ NPs that can overcome the resistance of ciprofloxacin, AgNPs and meropenem in *P. aeruginosa*

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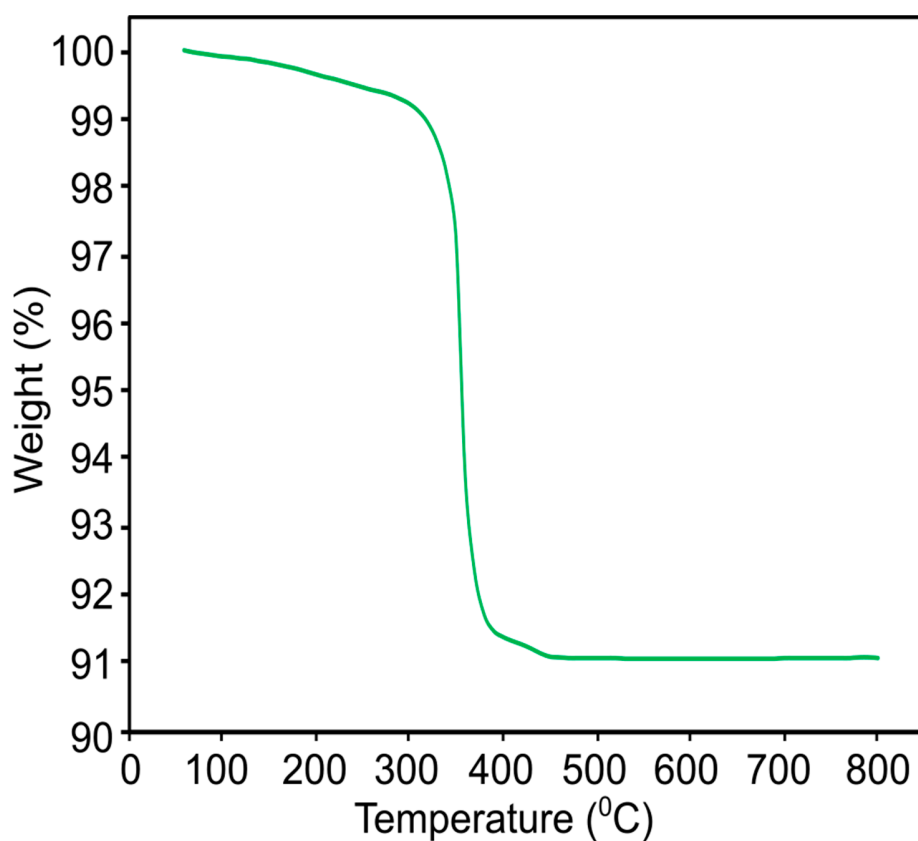


Figure S1 TGA curve of the as-synthesized bulk $(\text{BiO})_2\text{CO}_3$ sample

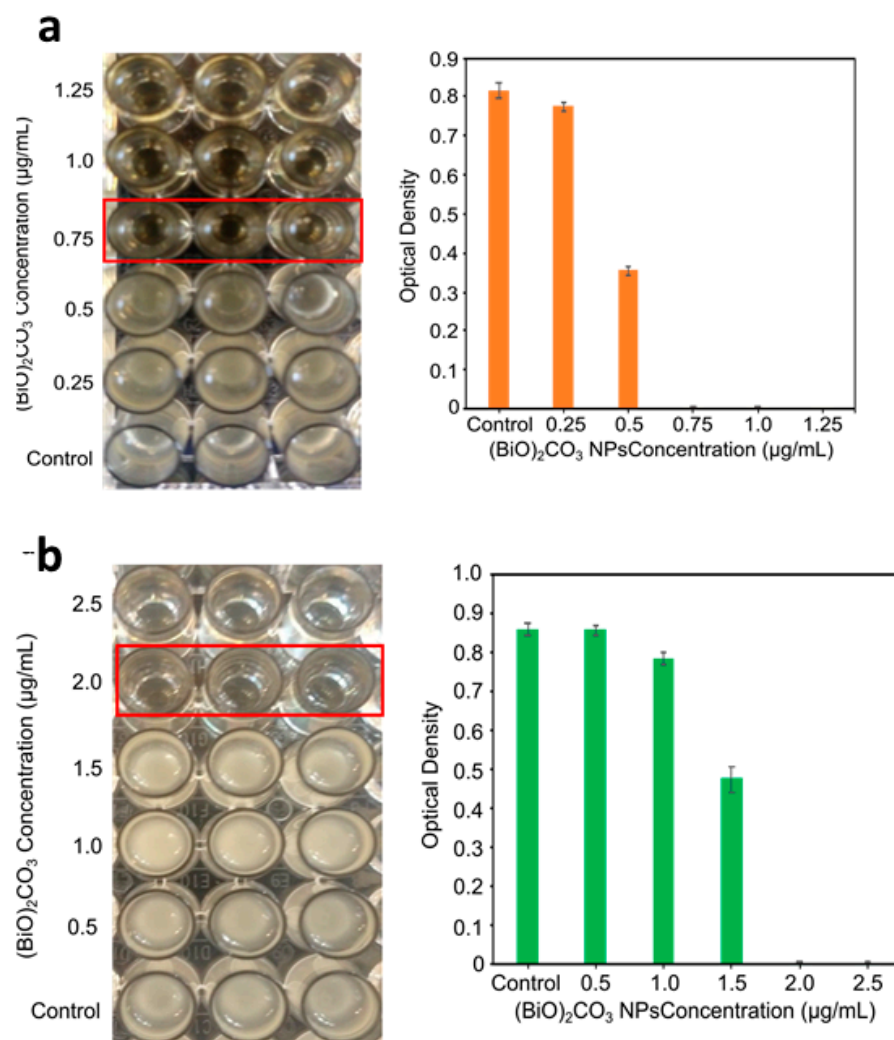


Figure S2 Representative images and plots of optical density value vs. concentration of (BiO)₂CO₃ NPs against (a) PA and (b) SA

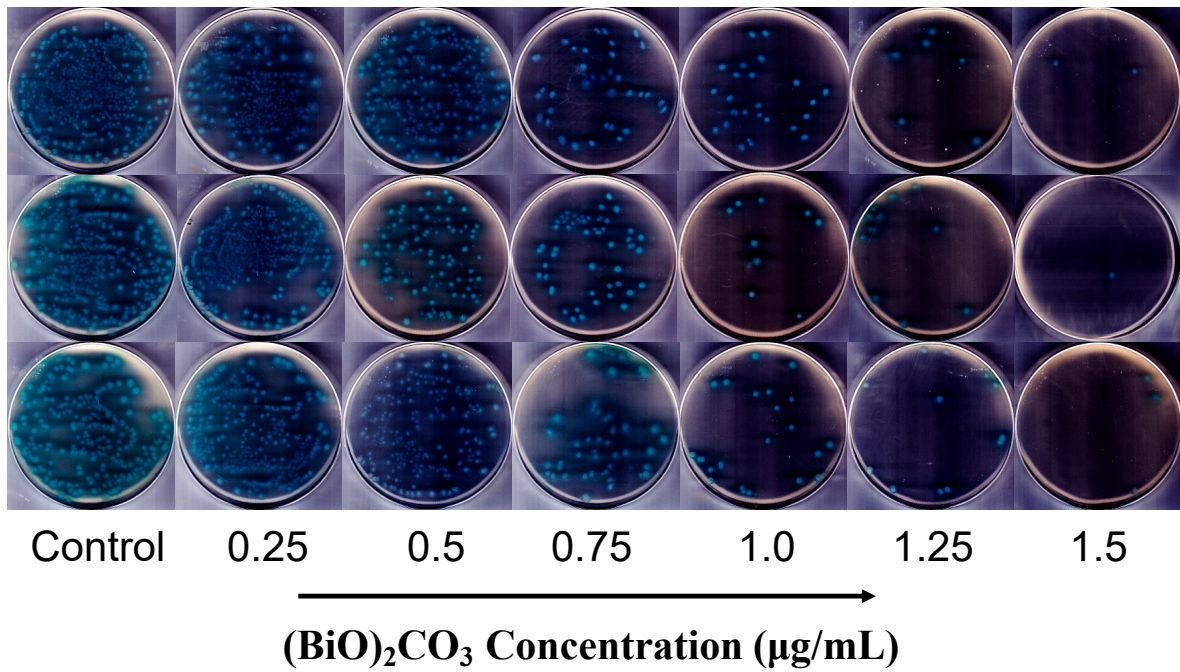
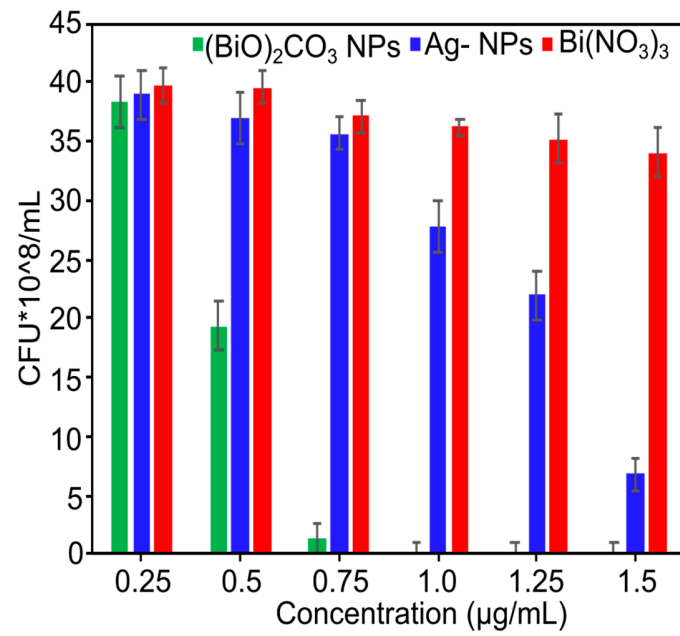


Figure S3 A representative plot of CFU enumeration results of $(\text{BiO})_2\text{CO}_3$ NPs against PA and representative images of CFU enumeration results of $(\text{BiO})_2\text{CO}_3$ NPs against PA

Table S1 MIC values of (BiO)₂CO₃ NPs against the AgNPs-, ciprofloxacin-, and meropenem-resistant PA for 30 consecutive days.

MIC Values							
Day	PA ^{AgR}	PA ^{cipR}	PA ^{meroR}	Day	PA ^{AgR}	PA ^{cipR}	PA ^{meroR}
1	1.25	1	1.75	16	1.5	1.25	5
2	1.25	1	1.75	17	1.5	1.25	2.5
3	1.25	1	1.75	18	1.25	1.25	5
4	1.25	1	1.75	19	1.25	1.25	5
5	1.25	1.25	1.75	20	1.25	1.25	5
6	1.25	1	1.75	21	1.25	1.25	5
7	1.5	1	2.5	22	1.25	1.25	5
8	1.5	1	2.5	23	1.5	1.25	10
9	1.25	1.25	2.5	24	1.5	1.25	10
10	1.25	1.25	2.5	25	1.75	1.5	10
11	1.25	1	5	26	1.75	1.25	10
12	1.25	1	5	27	2	1.25	20
13	1.5	1.25	2.5	28	2	1.5	10
14	1.5	1.25	2.5	29	4	1.5	20
15	1.5	1.25	5	30	4	1.5	20

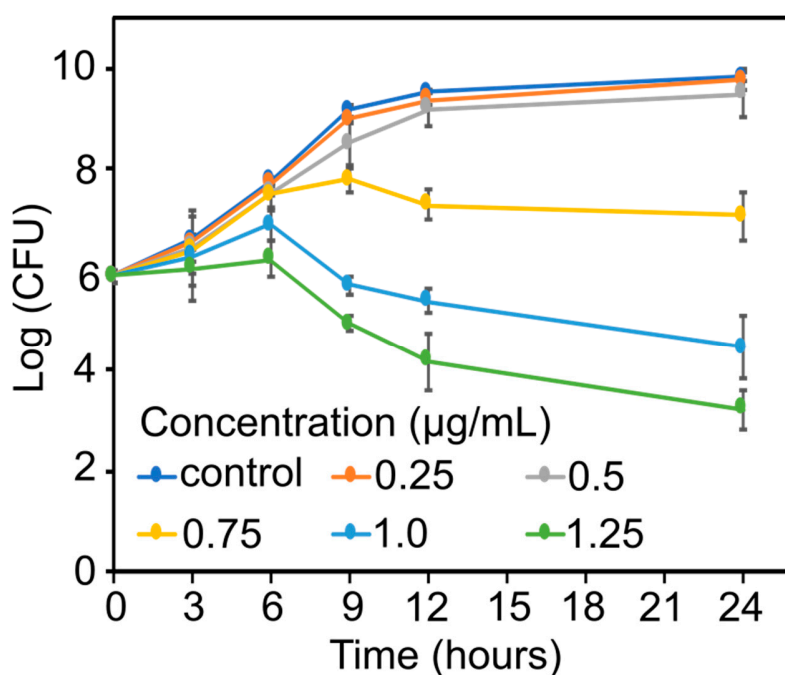


Figure S4 Time-kill curves of (BiO)₂CO₃ NPs against PA with various concentrations during the course of 24-h incubation period (mean ± s.d, n =3 replicates)

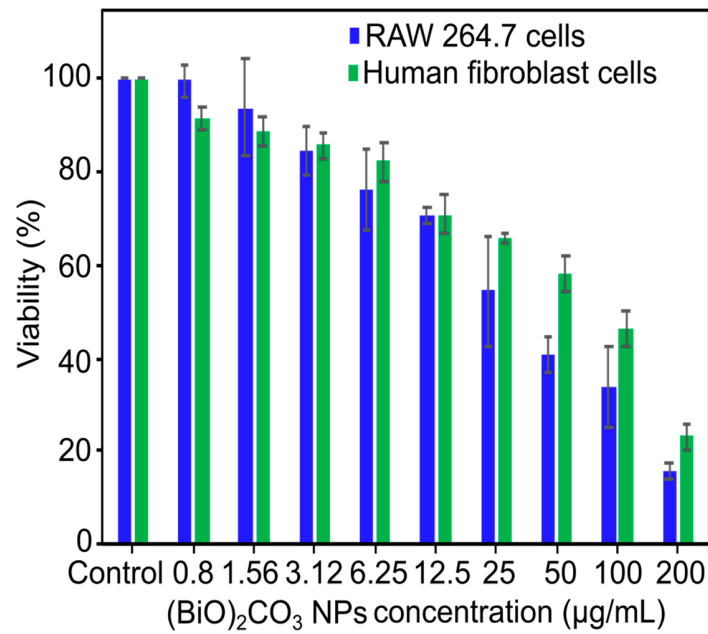


Figure S5 Cell viability curves of (BiO)₂CO₃ NPs against human fibroblast cells and murine RAW 264.7 cells

Table S2 FIC index of (BiO)₂CO₃ NPs in combination with meropenem antibiotic.

MIC (µg/mL) against DRPA				FIC index
Mero	Mero+ (BiO) ₂ CO ₃	(BiO) ₂ CO ₃	(BiO) ₂ CO ₃ + mero	0.45
2.0	0.25	0.75	0.25	