Supporting Information

Transparent Polycarbonate Coated with CeO_2 Nanozymes Repel *Pseudomonas aeruginosa* PA14 Biofilms

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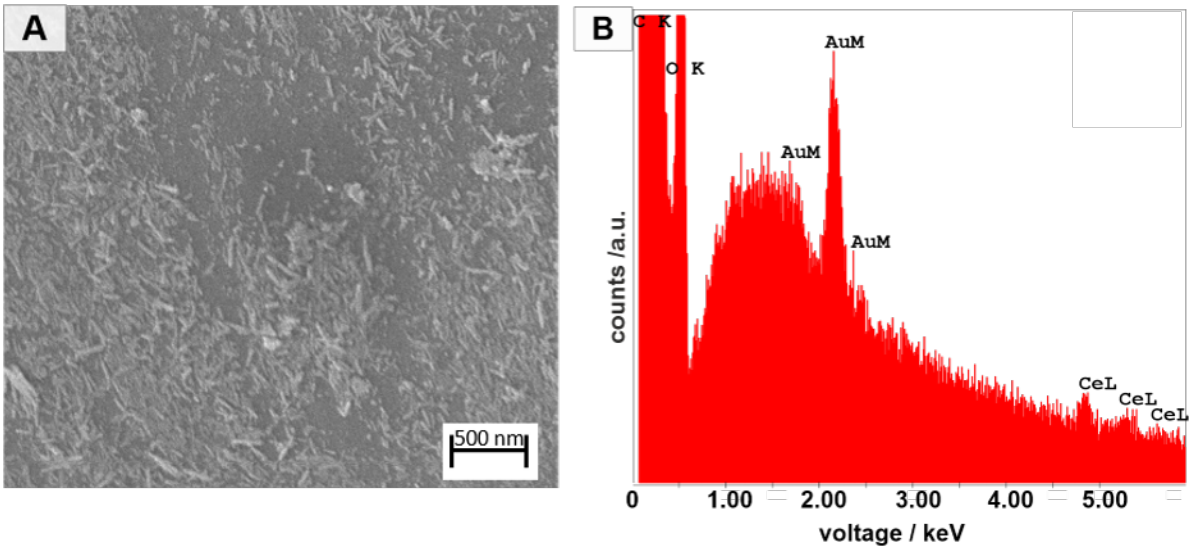


Fig. S1. Scanning electron microscope (SEM) image (A) and energy-dispersive X-ray (EDX) spectrum (B) of a CeO_2 coated polycarbonate surface.

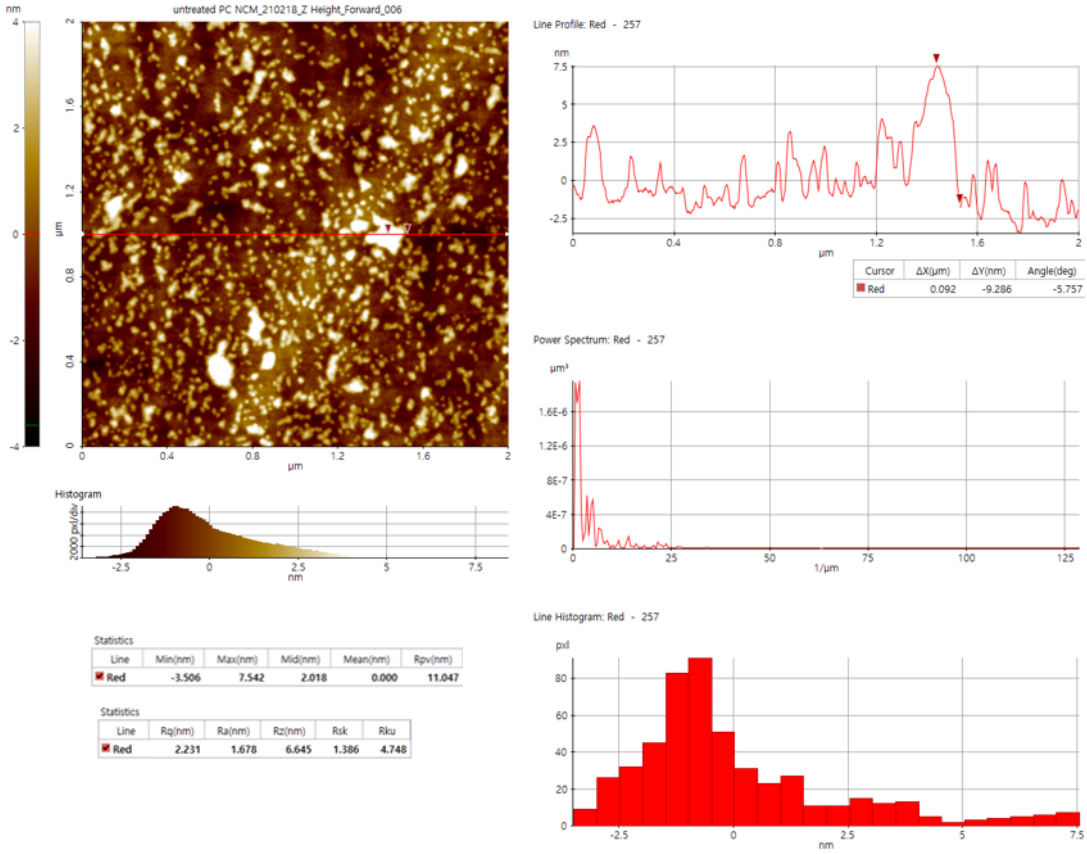
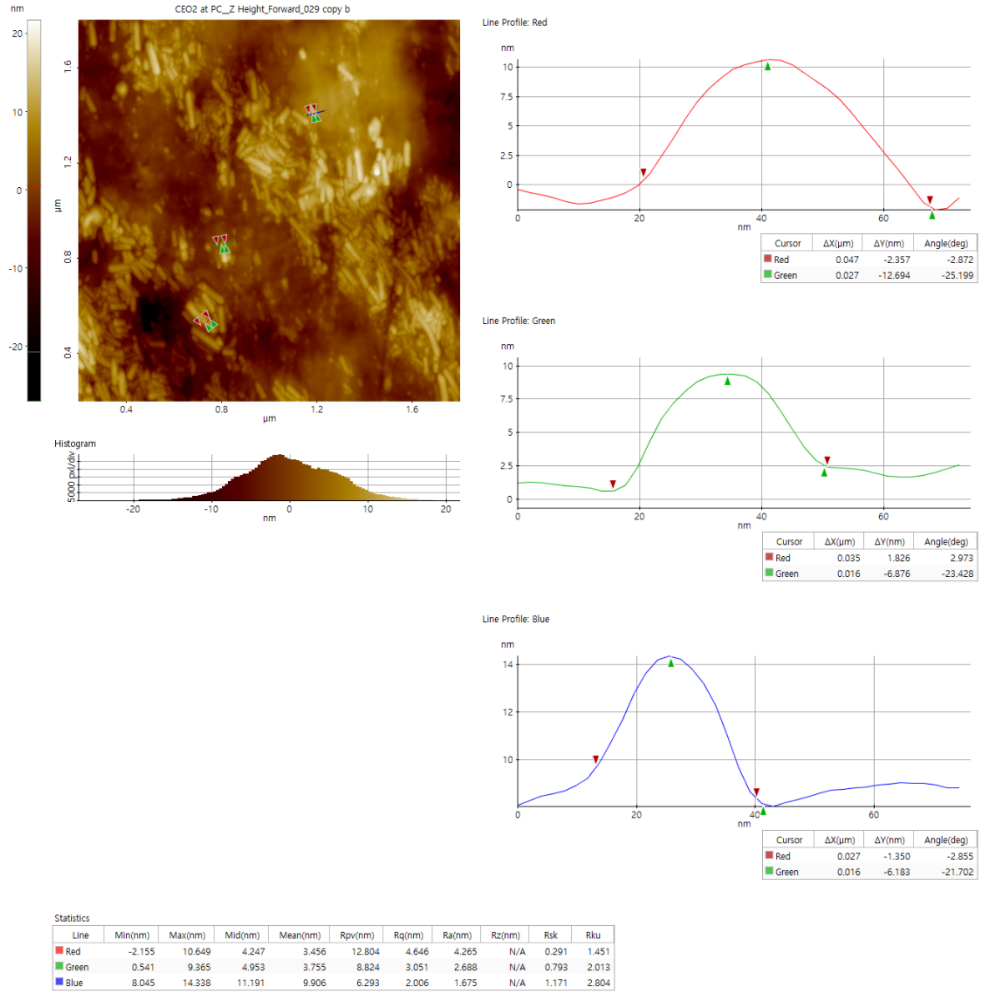


Fig. S2. AFM analysis of a non-coated polycarbonate plate.



Cursor	ΔX(μm)	ΔY(nm)	Angle(deg)
Red	0.047	-2.357	-2.872
Green	0.027	-12.694	-25.199

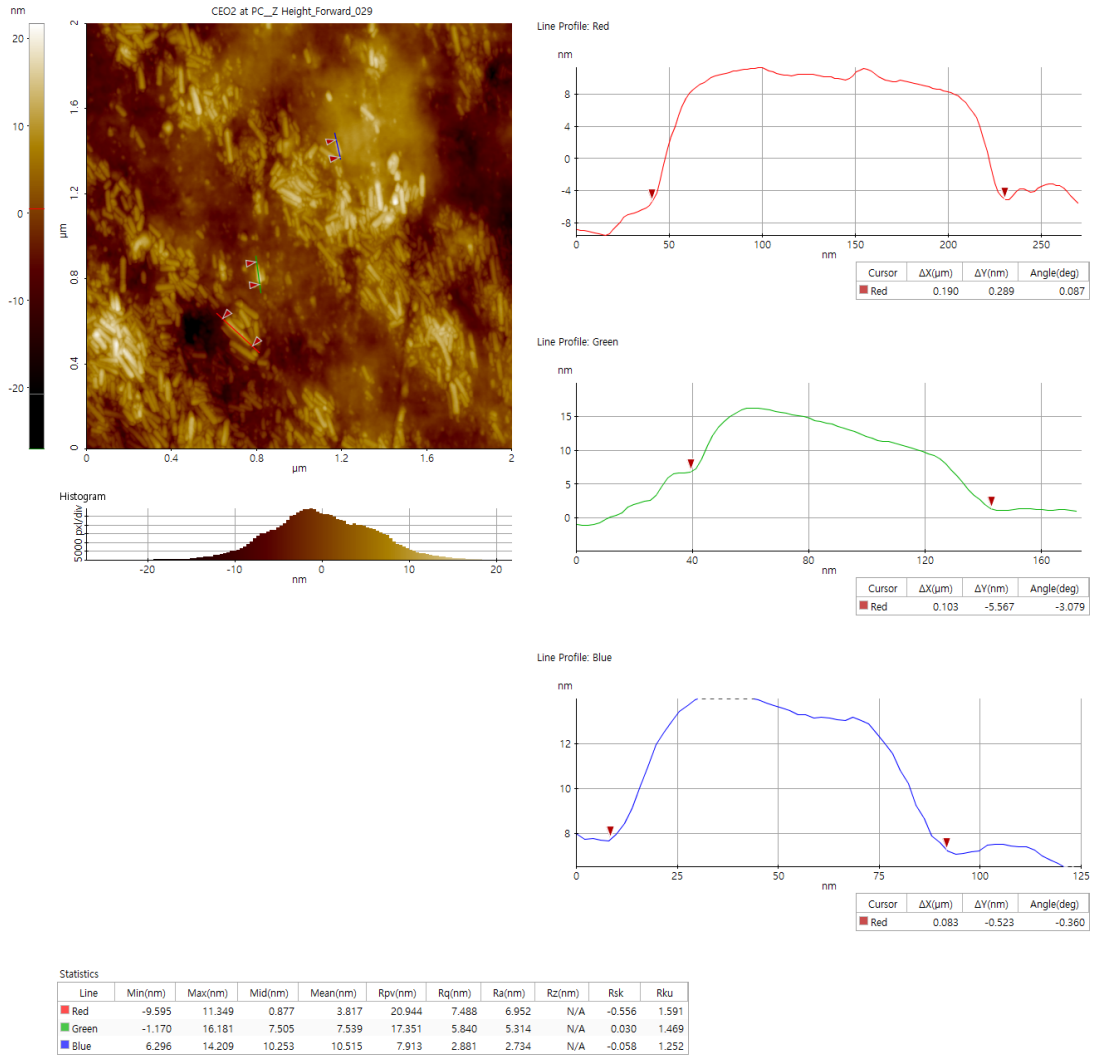
Cursor	ΔX(μm)	ΔY(nm)	Angle(deg)
Red	0.035	1.826	2.973
Green	0.016	-6.876	-23.428

Cursor	ΔX(μm)	ΔY(nm)	Angle(deg)
Red	0.027	-1.350	-2.855
Green	0.016	-6.183	-21.702

Statistics

Line	Min(nm)	Max(nm)	Mid(nm)	Mean(nm)	Rpv(nm)	Rq(nm)	Ra(nm)	Rz(nm)	Rsk	Rku
Red	-2.155	10.649	4.247	3.456	12.804	4.646	4.265	N/A	0.291	1.451
Green	0.541	9.365	4.953	3.755	8.824	3.051	2.688	N/A	0.793	2.013
Blue	8.045	14.338	11.191	9.906	6.293	2.006	1.675	N/A	1.171	2.804

Fig. S3. AFM analysis of a CeO_2-coated polycarbonate plate.



Statistics

Line	Min(nm)	Max(nm)	Mid(nm)	Mean(nm)	Rpv(nm)	Rq(nm)	Ra(nm)	Rz(nm)	Rsk	Rku
Red	-9.595	11.349	0.877	3.817	20.944	7.488	6.952	N/A	-0.556	1.591
Green	-1.170	16.181	7.505	7.539	17.351	5.840	5.314	N/A	0.030	1.469
Blue	6.296	14.209	10.253	10.515	7.913	2.881	2.734	N/A	-0.058	1.252

Fig. S4. AFM nanoparticle size analysis of a CeO_2-coated polycarbonate plate.

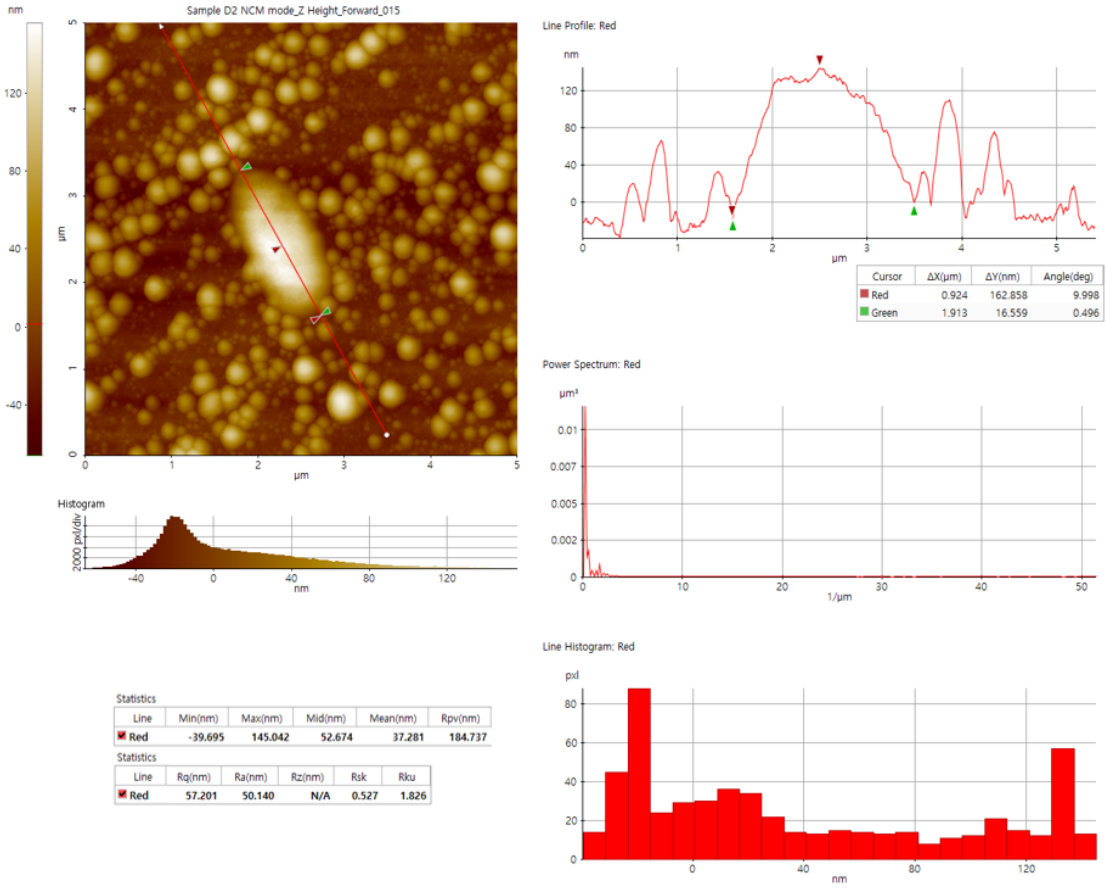
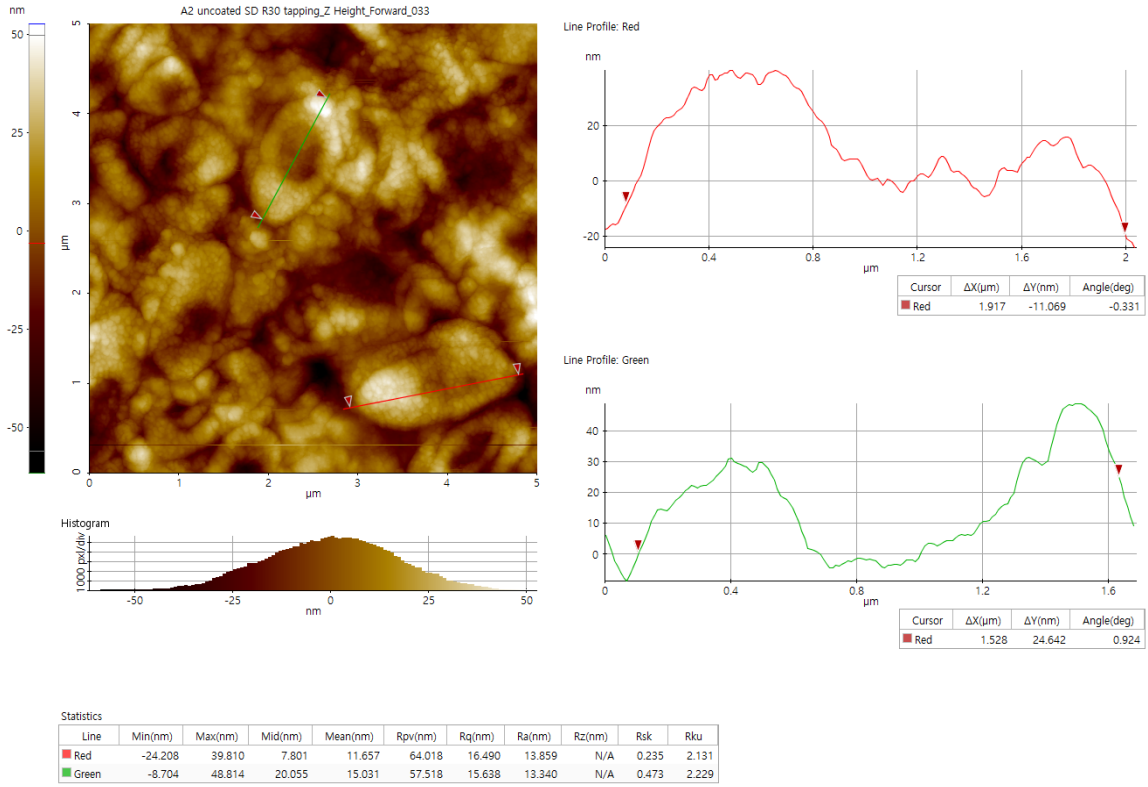


Fig. S5 AFM analysis of a CeO_2-coated polycarbonate plate with *P. aeruginosa*.



Statistics

Line	Min(nm)	Max(nm)	Mid(nm)	Mean(nm)	Rpv(nm)	Rq(nm)	Ra(nm)	Rz(nm)	Rsk	Rku
Red	-24.208	39.810	7.801	11.657	64.018	16.490	13.859	N/A	0.235	2.131
Green	-8.704	48.814	20.055	15.031	57.518	15.638	13.340	N/A	0.473	2.229

Fig. S6 AFM analysis of a non-coated polycarbonate plate with a *P. aeruginosa* biofilm.

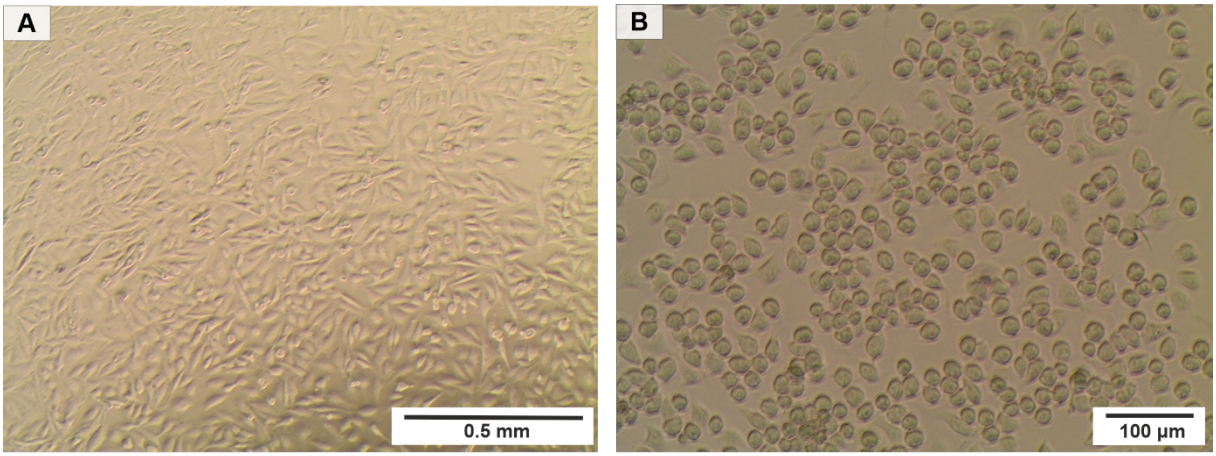


Fig. S7 Optical microscopy image of HeLa (A) and RAW(B) cells on the surface of a CeO_2 coated polycarbonate plate.

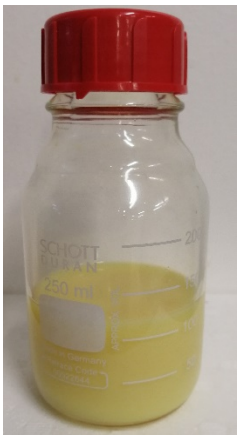


Fig. S8 Aqueous suspension of NTA-functionalized CeO_2 nanorods.

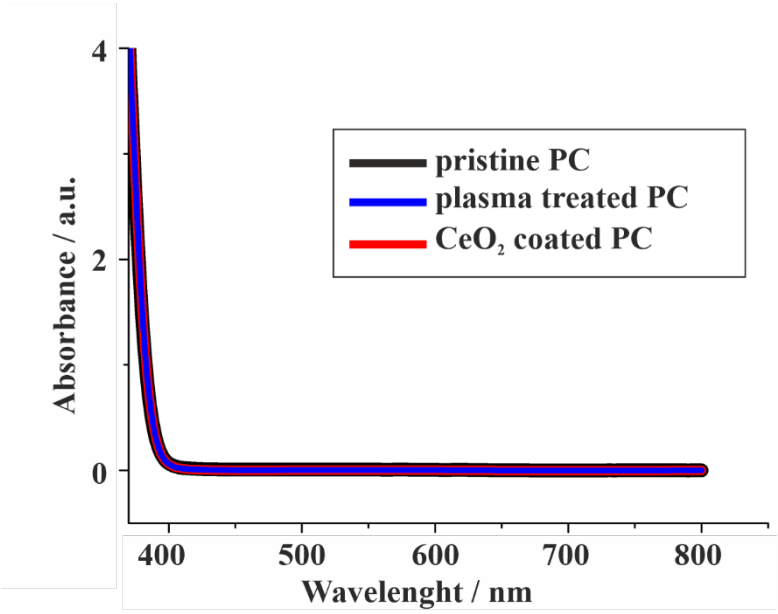


Fig. S9 UV/Vis spectra of pristine, plasma-treated and CeO_2-coated polycarbonate plates.

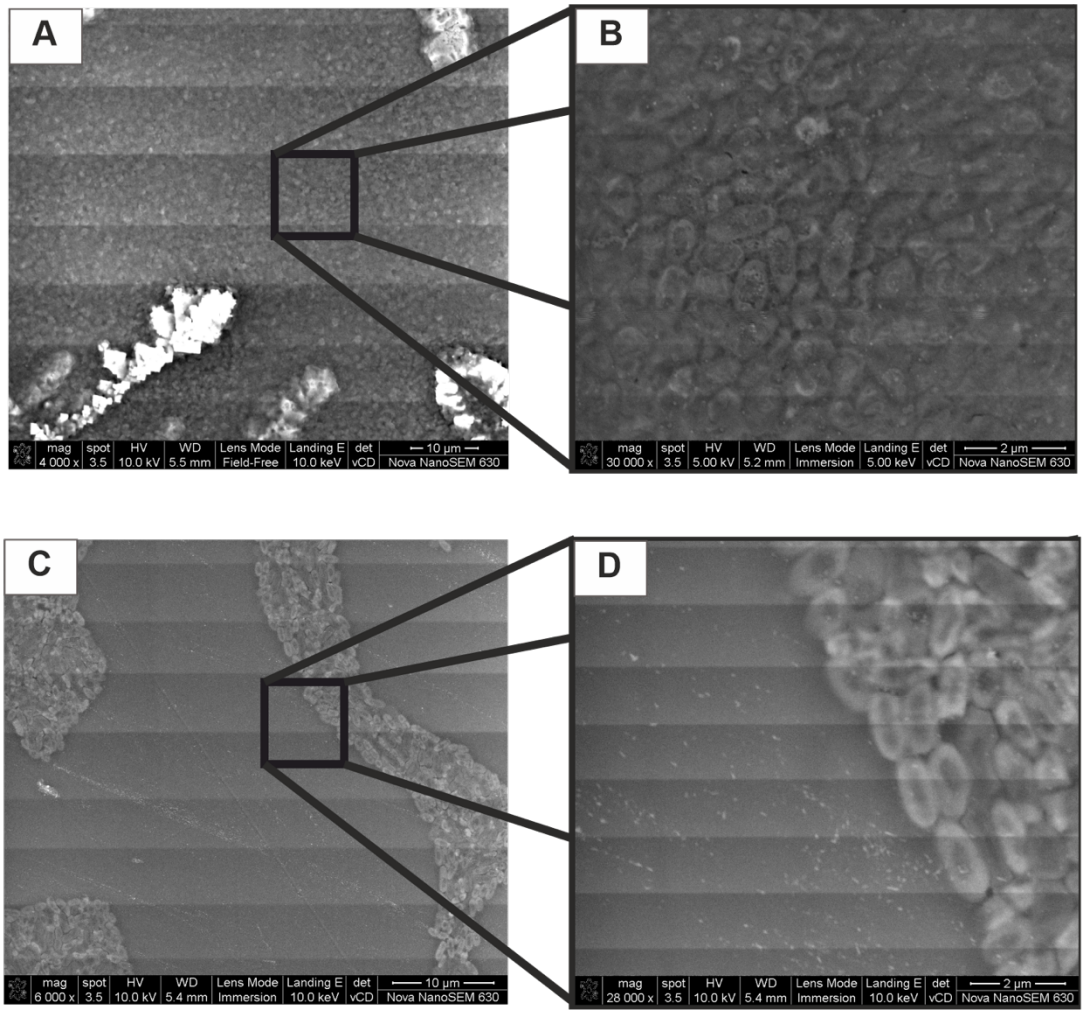
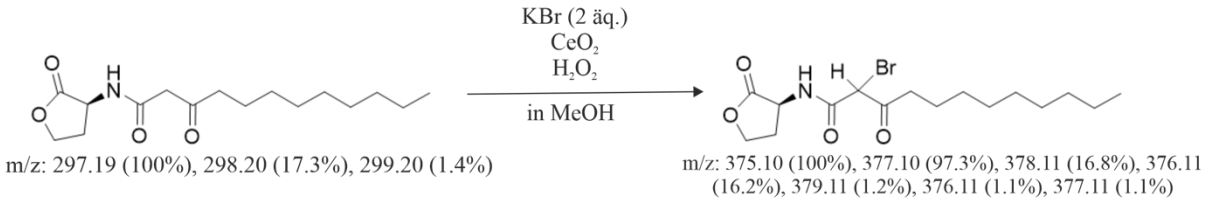


Fig. S10 Scanning electron microscope (SEM) images of *P. aeruginosa* PA14 biofilms on a+b) non coated and c+d) with CeO_2-coated polycarbonate.

Bromination of the quorum sensing signaling molecule *N*-(3-Oxododecanoyl)-L-homoserine lactone of *P. aeruginosa*:

N-(3-Oxododecanoyl)-L-homoserine lactone (3-oxo-C12-HSL) is a quorum sensing signaling molecule of *P. aeruginosa*. To confirm the hypothesis of oxidative bromination of the signal molecule, a reaction mixture was mixed with 3-oxo-C12-HSL (0.012 mmol), KBr (0.024 mmol), CeO_2 nanoparticles (2 mg) and H_2O_2 35% (16 µL) in methanol and was stirred for an hour.



The reaction mixture was placed on a thin layer chromatography (TLC) plate and was put in a glass beaker with the eluent ethyl acetate:cyclohexane (5:1). The spots were examined by mass spectrometry (TLC MS). The results from the mass spectra are displayed in Fig. S11.

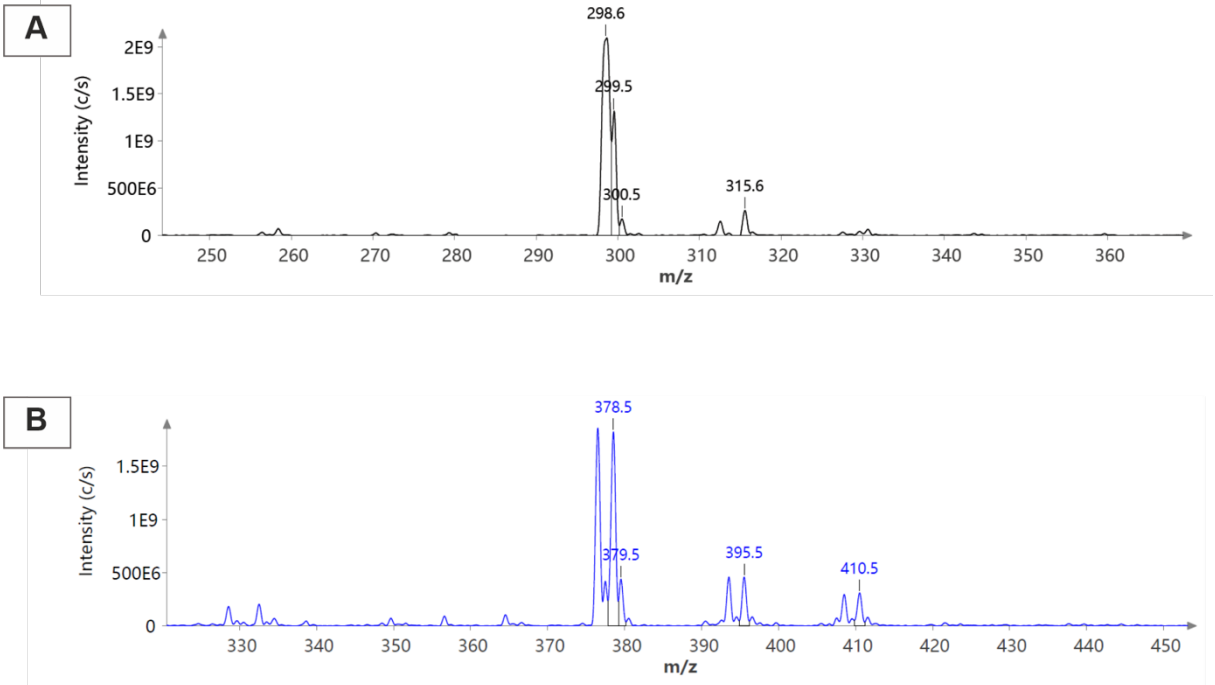


Fig. S11 Positive-ionization mode mass spectra of a) 3-oxo-C12-HSL and b) monobrominated 3-oxo-C12-HSL.