

Cr³⁺ Doping Effects on Structural, Optical, and Morphological Characteristics of BaTiO₃ Nanoparticles and Their Bioactive Behavior

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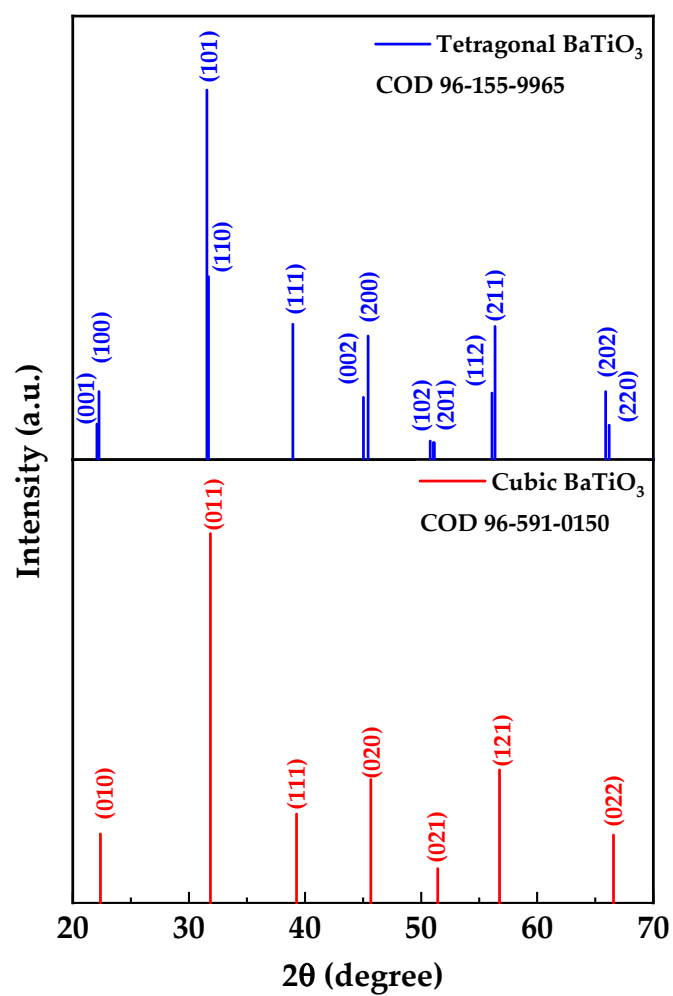
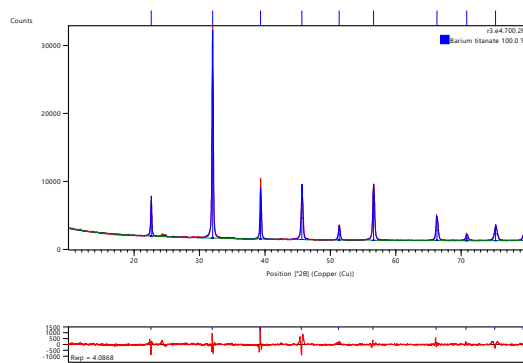
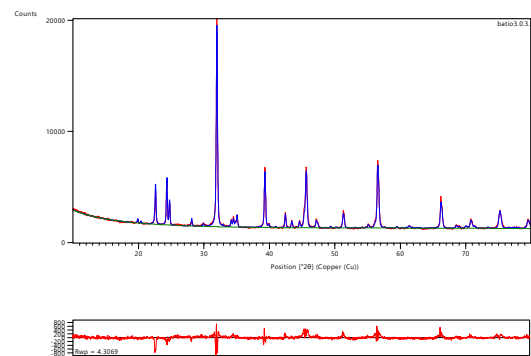


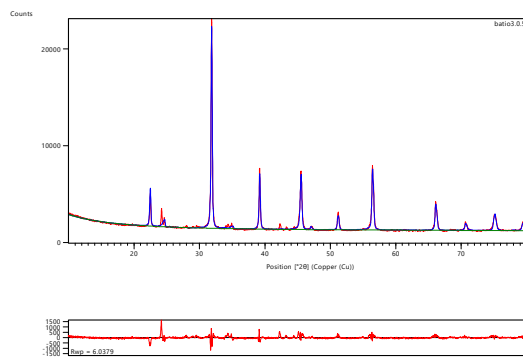
Figure S1. COD X-ray diffraction standard



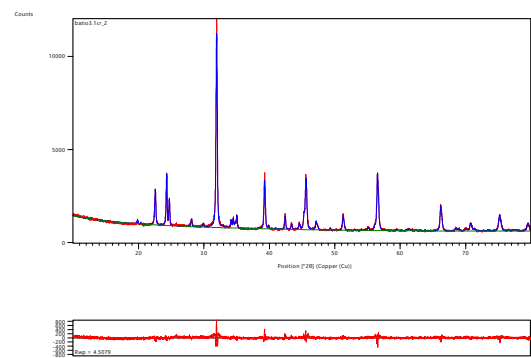
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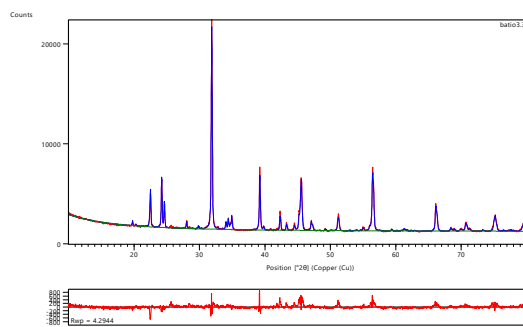
(b)



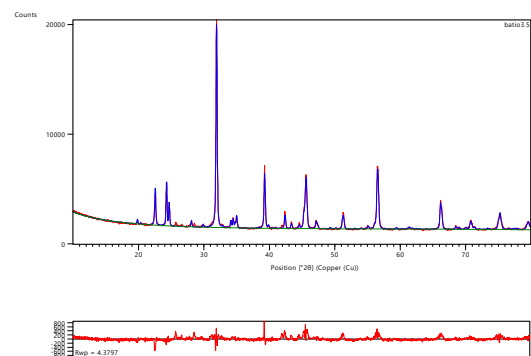
(c)



(d)



(e)



(f)

Figure S2. Rietveld refinement plots of a) BaTiO₃, b) BaTiO₃-0.3%Cr³⁺, c) BaTiO₃-0.5%Cr³⁺, d) BaTiO₃-1%Cr³⁺, e) BaTiO₃-3%Cr³⁺ and f) BaTiO₃-5%Cr³⁺

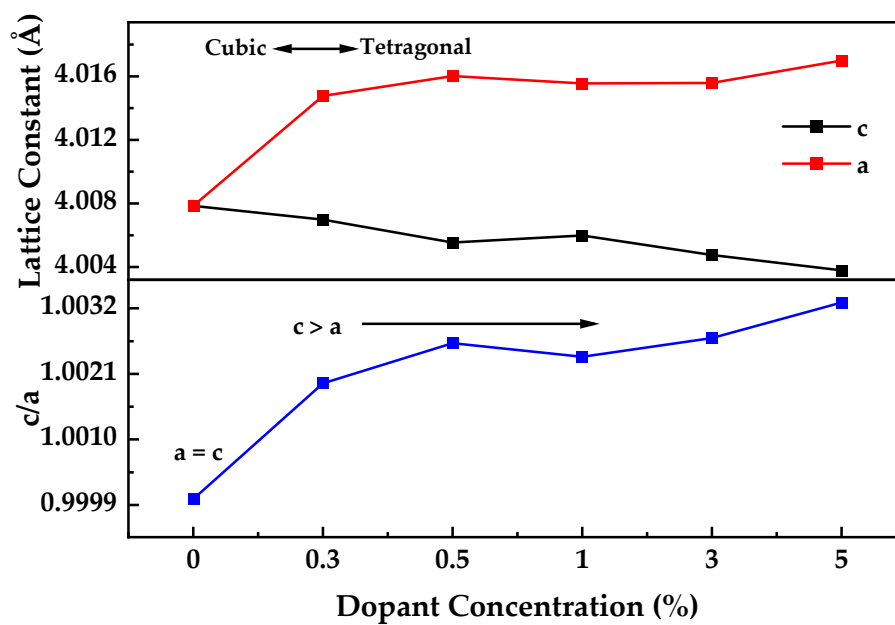


Figure S3. Influence of dopant concentration on BaTiO₃ lattice constant and the tetragonality

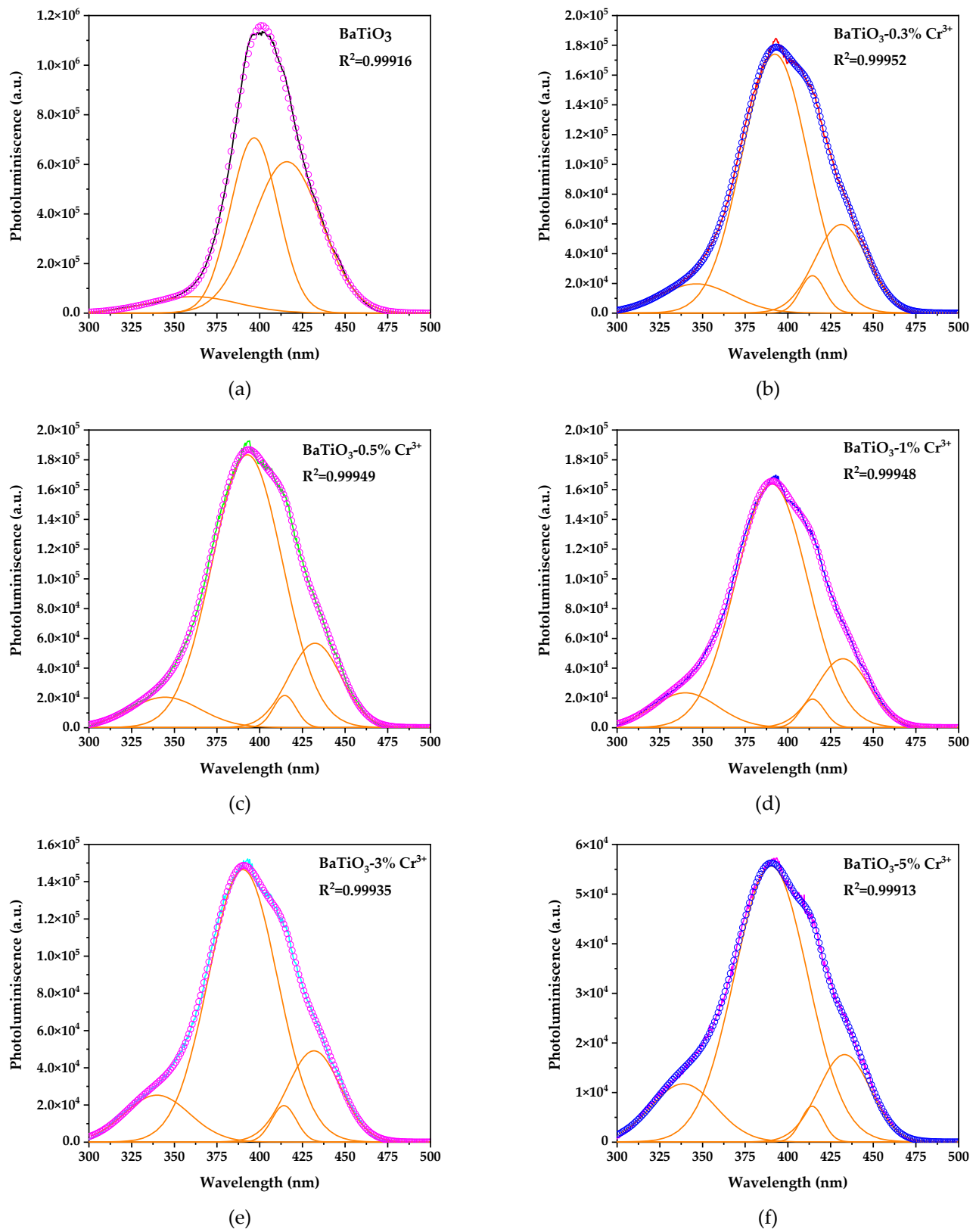


Figure S4. Deconvolution peaks of a) BaTiO_3 , b) $\text{BaTiO}_3-0.3\% \text{Cr}^{3+}$, c) $\text{BaTiO}_3-0.5\% \text{Cr}^{3+}$, d) $\text{BaTiO}_3-1\% \text{Cr}^{3+}$, e) $\text{BaTiO}_3-3\% \text{Cr}^{3+}$ and f) $\text{BaTiO}_3-5\% \text{Cr}^{3+}$

Table S1. Deconvolution parameters of a) BaTiO₃, b) BaTiO₃-0.3%Cr³⁺, c) BaTiO₃-0.5%Cr³⁺, d) BaTiO₃-1%Cr³⁺, e) BaTiO₃-3%Cr³⁺ and f) BaTiO₃-5%Cr³⁺

Sample	Peak	Area Intg	FWHM	Max Height	Center Grvty	Area IntgP
BaTiO ₃	1	4239369.81	60.6441	66253.9247	361.17146	7.08311
	2	2.46E+07	32.77715	706183.553	396.74835	41.1665
	3	3.10E+07	47.69312	610112.489	415.92255	51.75038
BaTiO ₃ -0.3%Cr ³⁺	1	1027837.15	50.11289	19553.6161	346.41988	8.39741
	2	8452063.94	45.66641	173873.784	392.37192	69.05322
	3	455021.185	17.07629	25032.5933	414.41375	3.71752
	4	2305004.92	36.42685	59445.6309	431.31545	18.83185
BaTiO ₃ -0.5%Cr ³⁺	1	1035850.4	48.50096	20376.871	344.50947	7.95107
	2	9460696.02	48.51606	183192.149	392.7636	72.61918
	3	362833.446	15.8236	21541.193	414.6574	2.78507
	4	2168439.51	35.98774	56606.0222	432.37895	16.64469
BaTiO ₃ -1%Cr ³⁺	1	1092026.2	44.78189	23326.1781	339.92811	9.22391
	2	8640945.07	49.597	163673.13	390.61627	72.98661
	3	336910.576	16.58479	19084.1369	414.48742	2.84575
	4	1769201.38	35.97479	46200.7282	432.24222	14.94374
BaTiO ₃ -3%Cr ³⁺	1	1183710.41	45.00471	25176.9323	339.83527	10.93363
	2	7378729.82	47.3539	146384.544	390.16303	68.15546
	3	358526.563	17.23669	19540.4849	414.17396	3.31162
	4	1905356.16	36.53883	48988.2273	431.77507	17.59929
BaTiO ₃ -5%Cr ³⁺	1	545139.048	44.72394	11691.8612	338.77525	12.63884
	2	2981427.69	50.39104	55583.2909	390.17909	69.12325
	3	118805.786	15.5548	7175.31332	414.18325	2.75447
	4	667833.04	35.67643	17585.5743	433.20156	15.48345

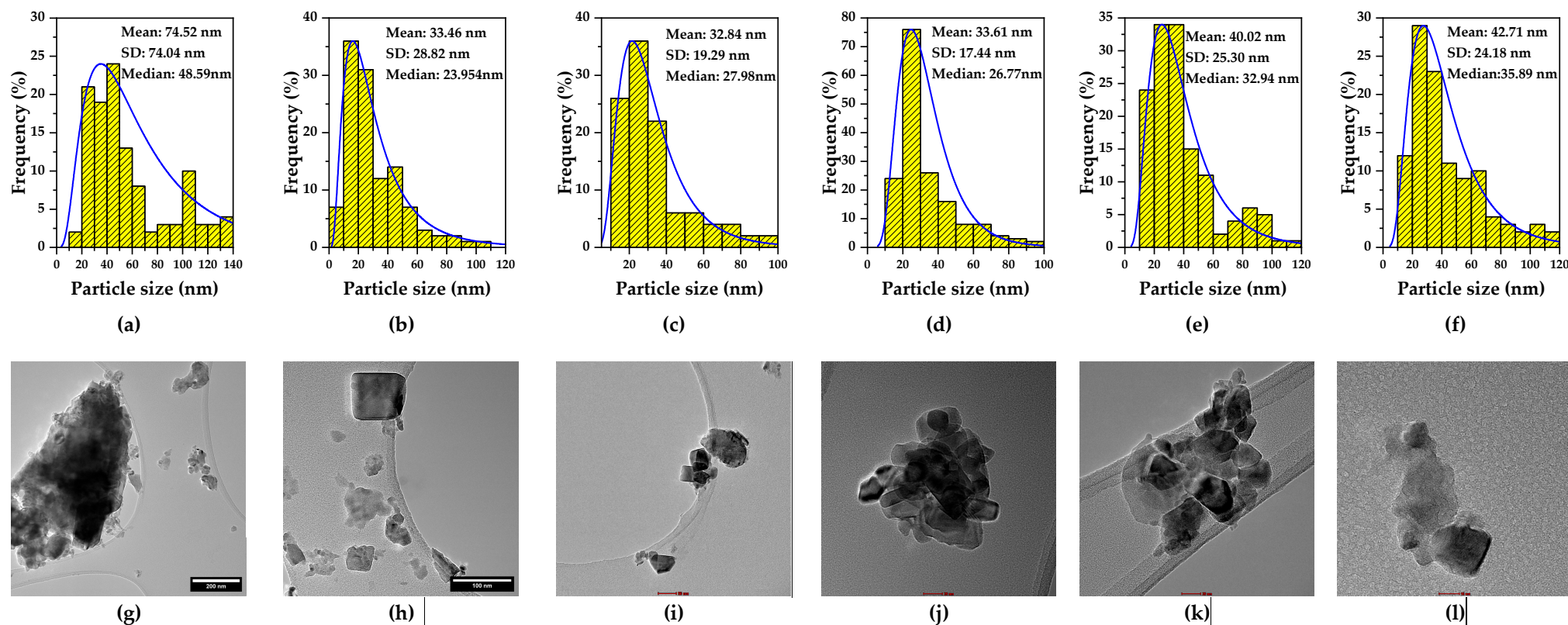
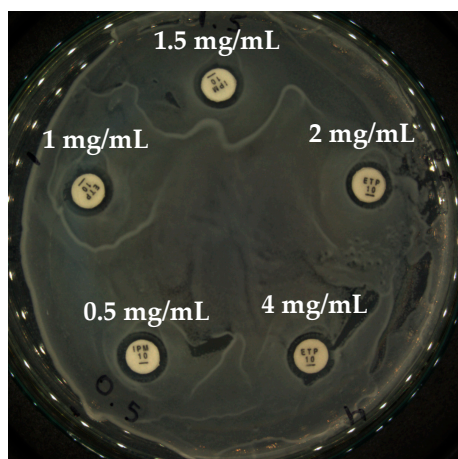
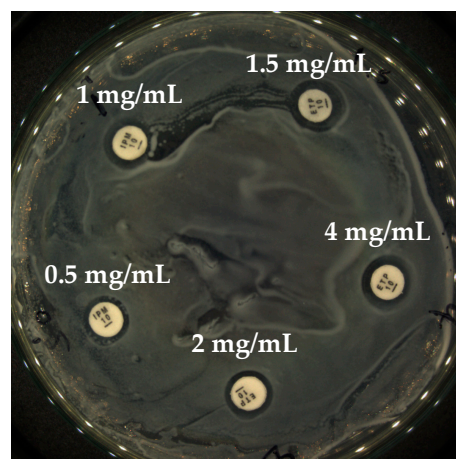


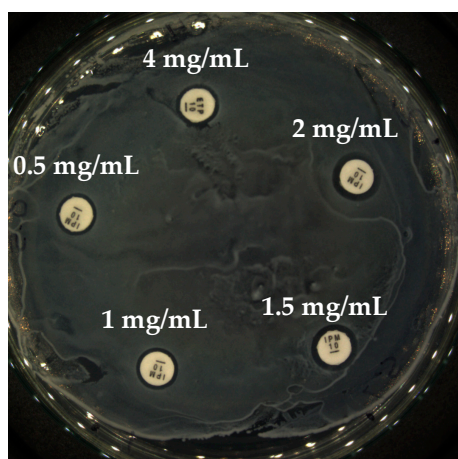
Figure S4. TEM particle size distribution and micrographs of a,g) BaTiO_3 , b,h) BaTiO_3 -0.3% Cr^{3+} , c,i) BaTiO_3 -0.5% Cr^{3+} , d,j) BaTiO_3 -1% Cr^{3+} , e,k) BaTiO_3 -3% Cr^{3+} and f,l) BaTiO_3 -5% Cr^{3+} .



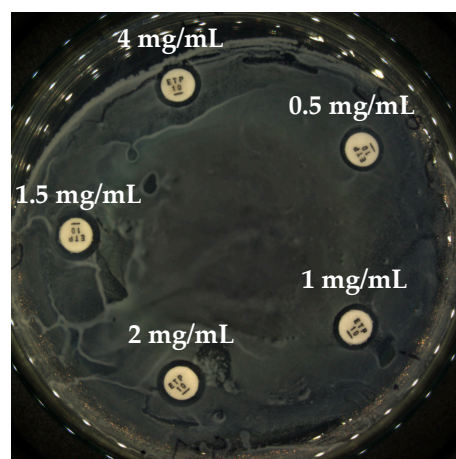
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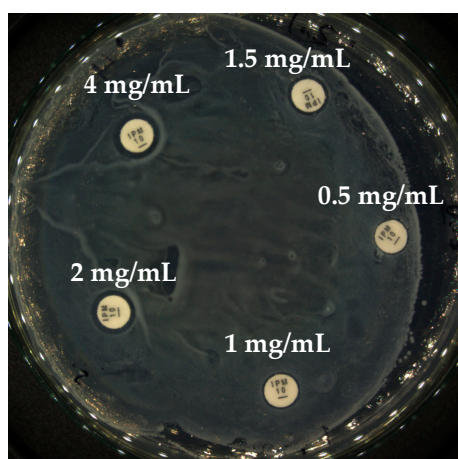
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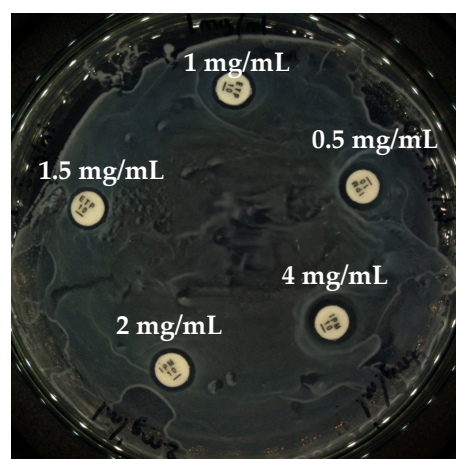
(c)



(d)



(e)



(f)

Figure S5. Inhibition zone of a) BaTiO_3 , b) $\text{BaTiO}_3\text{-}0.3\%\text{Cr}^{3+}$, c) $\text{BaTiO}_3\text{-}0.5\%\text{Cr}^{3+}$, d) $\text{BaTiO}_3\text{-}1\%\text{Cr}^{3+}$, e) $\text{BaTiO}_3\text{-}3\%\text{Cr}^{3+}$ and f) $\text{BaTiO}_3\text{-}5\%\text{Cr}^{3+}$

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