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Supplementary information for

Precipitation at Room Temperature as a Fast and Versatile Method for Calcium Phosphate/TiO_2 Nanocomposites Synthesis

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Figure SI 1. Volume size distributions of TiNPls (a,b) and TiNWs (c,d) in c-SBF (a,c) and anionic reactant solution (c (Na_2HPO_4) = $8 \cdot 10^{-3}$ mol dm^{-3}, pH_{init} = 7.4, ϑ = (25.0 ± 0.1) °C.

Figure SI 2. Representative pH vs time curves obtained in the control system (without TiO_2 nanomaterials) and in the presence of different concentrations of TiO_2 a) nanoplates (TiNPls) and b) nanowires (TiNWs). c (CaCl2) = c (Na_2HPO_4) = $4 \cdot 10^{-3}$ mol dm^{-3}, pH_{init} = 7.4, ϑ = (25 ± 0,1) °C.

Table SI 1. Average induction time obtained from pH vs time curves from 3 measurements with standard deviations in the control system (without TiO_2 nanomaterials) and in the presence of different concentrations of TiO_2 nanoplates (TiNPls) and nanowires (TiNWs). c ($CaCl_2$) = c (Na_2HPO_4) = $4 \cdot 10^{-3}$ mol dm^{-3}, pH_{init} = 7.4, ϑ = (25.0 ± 0.1) °C.

Figure SI 3. SEM micrographs of the calcium deficient hydroxyapatite (CaDHA) formed in control system after 60 min reaction time. c ($CaCl_2$) = c (Na_2HPO_4) = $4 \cdot 10^{-3}$ mol dm^{-3}, pH_{init} = 7.4, ϑ = (25 ± 0.1) °C.

Figure SI 4. Simulated (red) and experimental (dark) EPR spectra of gamma irradiated precipitates formed after 60 min reaction time in control system (calcium deficient hydroxyapatite, CaDHA) and in the presence of 100 mg L^{-1} TiO_2 nanoplates (CaDHA/TiNPls), and nanowires (CaDHA/TiNWs).

Table SI 2. EPR spectral parameters extracted by simulation of experimental spectra according to Figures 8 and SI 4 for precipitates formed after 60 min reaction time in control system (calcium deficient hydroxyapatite, CaDHA) and in the presence of 100 mg L^{-1} TiO_2 nanoplates (CaDHA/TiNPls), and nanowires (CaDHA/TiNWs).

Figure SI 5. The intensity of DCF fluorescence after incubation in PBS with different concentrations of SIN-1 (NC – negative control; PC – positive control) used for comparison with a) TiO_2 nanoparticles (TiNPs), titanate nanotubes (TiNTs), TiO_2 nanowires (TiNWs), and TiO_2 nanoplates (TiNPls), and b) precipitates formed after 60 min reaction time in control system (calcium deficient hydroxyapatite, CaDHA) and in the presence of 100 mg L^{-1} TiO_2 nanoparticles (CaDHA/TiNPs), nanotubes (CaDHA/TiNTs), nanowires (CaDHA/TiNWs), and nanoplates (CaDHA/TiNPls).

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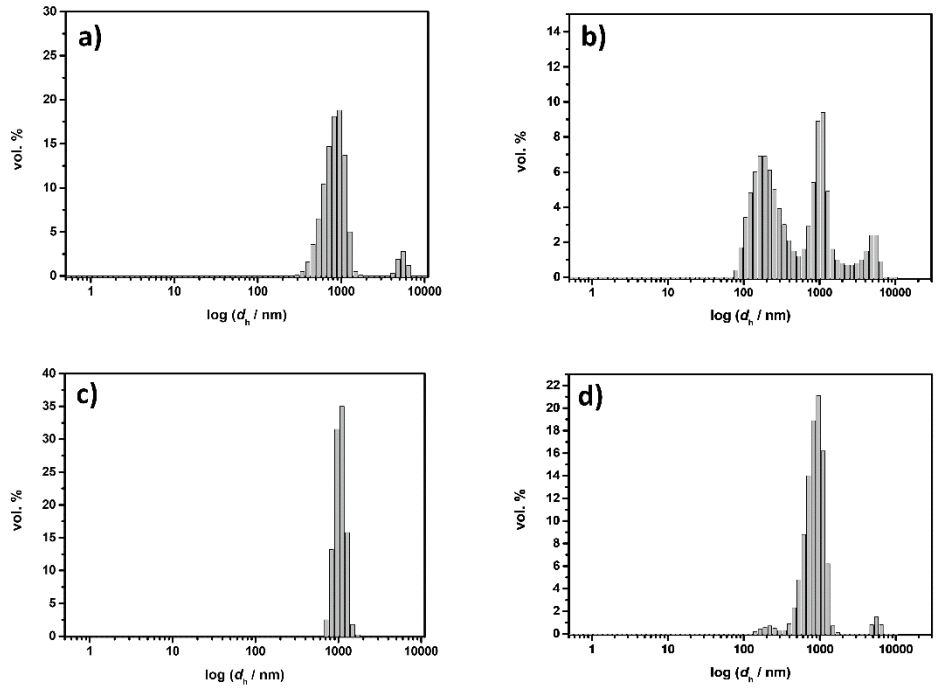

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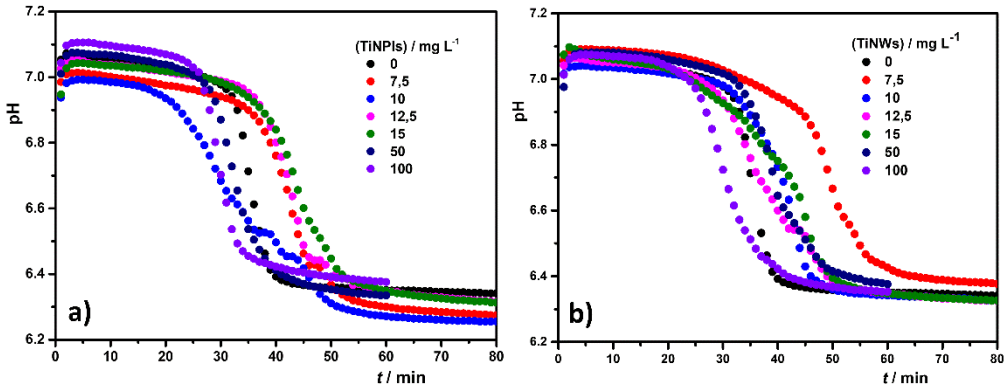

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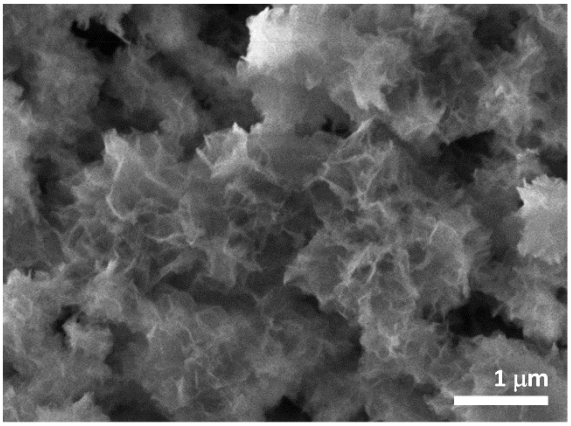
γ / mg L^{-1}	t_{ind} / min	
	TiNPls	**TiNWs**
0	29.4 ± 3.2	
7.5	36.4 ± 2.0	36.4 ± 4.0
10.0	35.0± 4.8	33.7 ± 2.4
12.5	35.8 ± 2.7	24.1 ± 4.5
15.0	36.1 ± 1.0	36.9 ± 2.3
50.0	27.1 ± 0.6	29.2 ± 1.34
100.0	25.3 ± 0.9	23.2 ± 1.6



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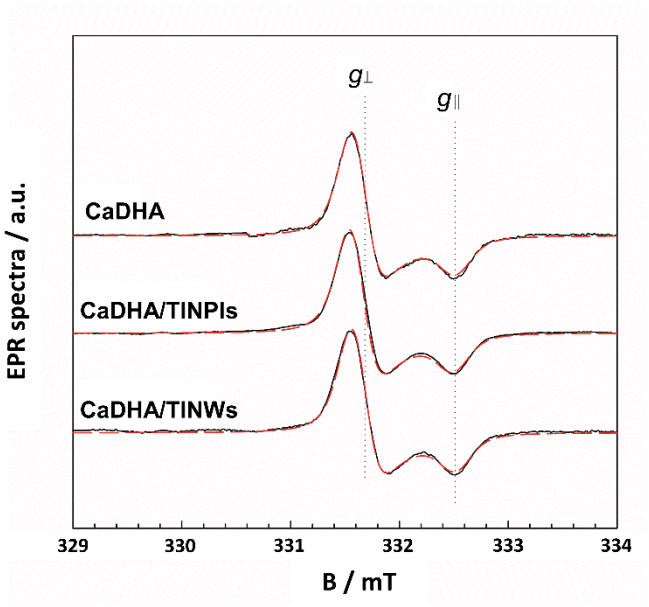

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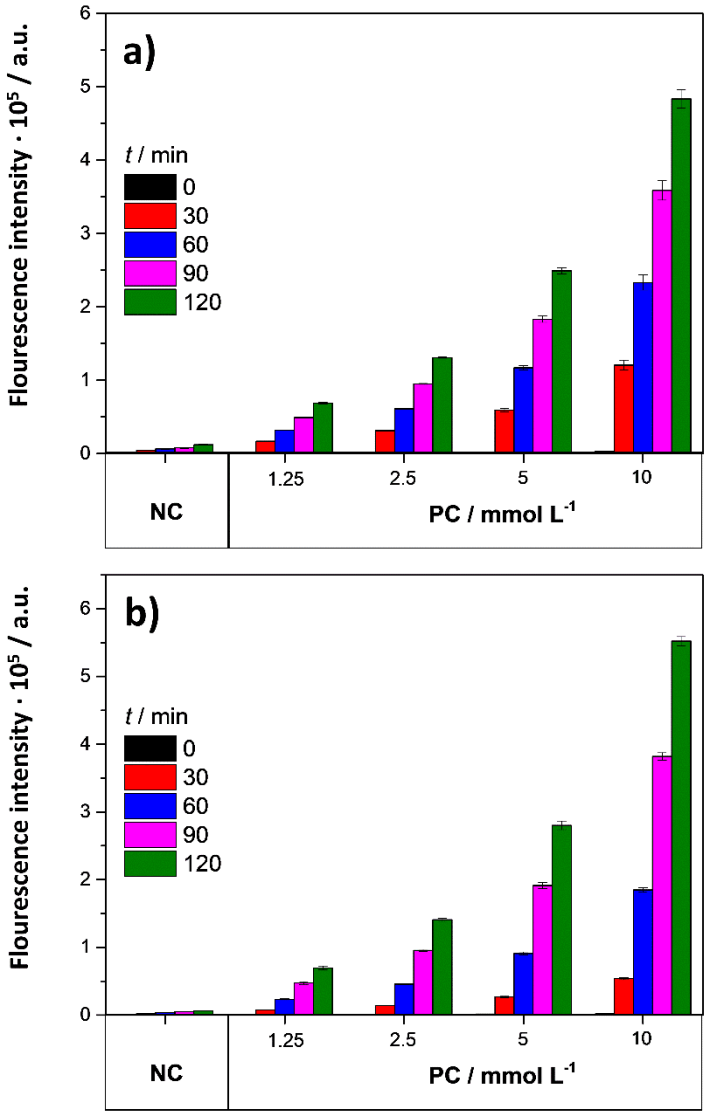
Sample	g⊥	g∥	ΔHGpp*	ΔHLpp*
CaDHA	2.0025	1.9972	0.186	0.125
CaDHA/TiNPls	2.0025	1.9971	0.186	0.127
CaDHA/TiNWs	2.0026	1.9972	0.186	0.126

*The determined line widths refer to peak-to-peak Gaussian, ΔH_{Gpp} and Lorentzian, ΔH_{Lpp} line shape



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Nanomaterial	Concentration / mg L^{-1}	% quenching	% autofluorescence
TiNPs	10	0%	102%
	100	5%	81%
	500	11%	86%
TiNTs	10	1%	101%
	100	11%	73%
	500	14%	67%
TiNWs	10	5%	227%
	100	23%	68%
	500	31%	75%
TiNPIs	10	1%	106%
	100	3%	97%
	500	6%	81%
CaDHA	10	4%	106%
	100	16%	71%
	500	21%	32%
CaDHA/TiNPs	10	1%	117%
	100	17%	53%
	500	31%	17%
CaDHA/TiNTs	10	1%	113%
	100	12%	71%
	500	27%	55%
CaDHA/TiNWs	10	5%	99%
	100	26%	31%
	500	30%	14%
CaDHA/TiNPls	10	5%	104%
	100	15%	59%
	500	32%	18%

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Material	Concentration (mg/L)	% absorbance (optical interference test)	% Hb recovery (adsorption test)
Blank (PBS)		100.00 ± 0.79%	100.00 ± 2.47%
Negative control (PEG)		N.A.	N.A.
Positive control (Triton)		N.A.	N.A.
TiNPs	10	98.73 ± 10.06%	87.21 ± 5.49%
	100	88.37 ± 10.40%	89.04 ± 5.61%
	500	100.61 ± 2.42%	98.30 ± 2.22%
TiNTs	10	96.30 ± 0.60%	97.78 ± 2.30%
	100	96.42 ± 6.39%	100.09 ± 1.82%
	500	107.33 ± 5.72%	98.99 ± 0.02%
TiNWs	10	97.93 ± 4.93%	106.27 ± 7.25%
	100	105.51 ± 3.68%	104.00 ± 1.76%
	500	101.38 ± 3.17%	99.61 ± 1.11%
TiNPIs	10	96.49 ± 4.20%	95.73 ± 0.45%
	100	100.67 ± 7.02%	94.44 ± 7.52%
	500	94.36 ± 7.91%	100.15 ± 2.92%
CaDHA	10	98.96 ± 0.58%	107.88 ± 9.39%
	100	101.49 ± 2.18%	104.46 ± 5.78%
	500	100.98 ± 0.88%	104.52 ± 5.04%
CaDHA/TiNPs	10	99.72 ± 1.14%	85.72 ± 7.00%
	100	108.46 ± 7.31%	99.71 ± 2.68%
	500	101.44 ± 2.15%	97.09 ± 1.66%
CaDHA/TiNTs	10	99.93 ± 1.12%	93.14 ± 4.16%
	100	102.63 ± 1.66%	94.33 ± 5.62%
	500	106.04 ± 4.64%	98.04 ± 0.55%
CaDHA/TiNWs	10	100.61 ± 1.52%	106.14 ± 3.21%
	100	104.66 ± 5.03%	95.19 ± 1.80%
	500	111.54 ± 9.69%	101.74 ± 0.68%
CaDHA/TiNPls	10	100.73 ± 0.93%	107.91 ± 5.07%
	100	107.18 ± 1.65%	92.96 ± 1.91%
	500	104.49 ± 1.93%	106.54 ± 5.17%