Electronic Supplementary Material (ESI) for RSC Advances

Electronic Supplementary

Structural Characterization, Solution Stability, and Potential Health and Environmental Effects of the Nano-TiO_2 Bioencapsulation Matrix and the Model Product of its Biodegradation TiBALDH

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Figure FS1 TGA of Captigel derived xerogel

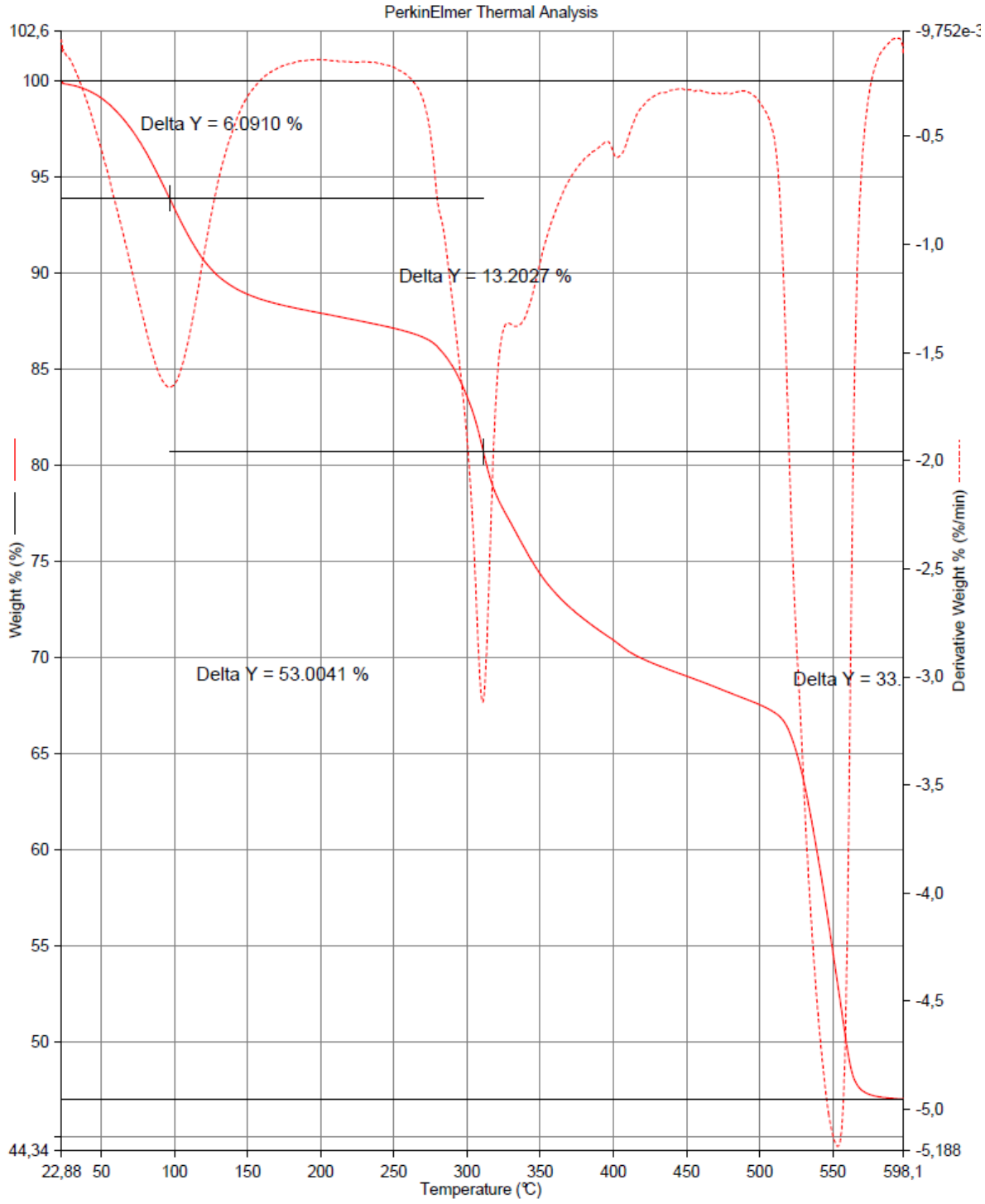


Figure FS2 X-ray powder pattern of the TiO_2 powder produced by heat treatment of CaptiGel at 500°C

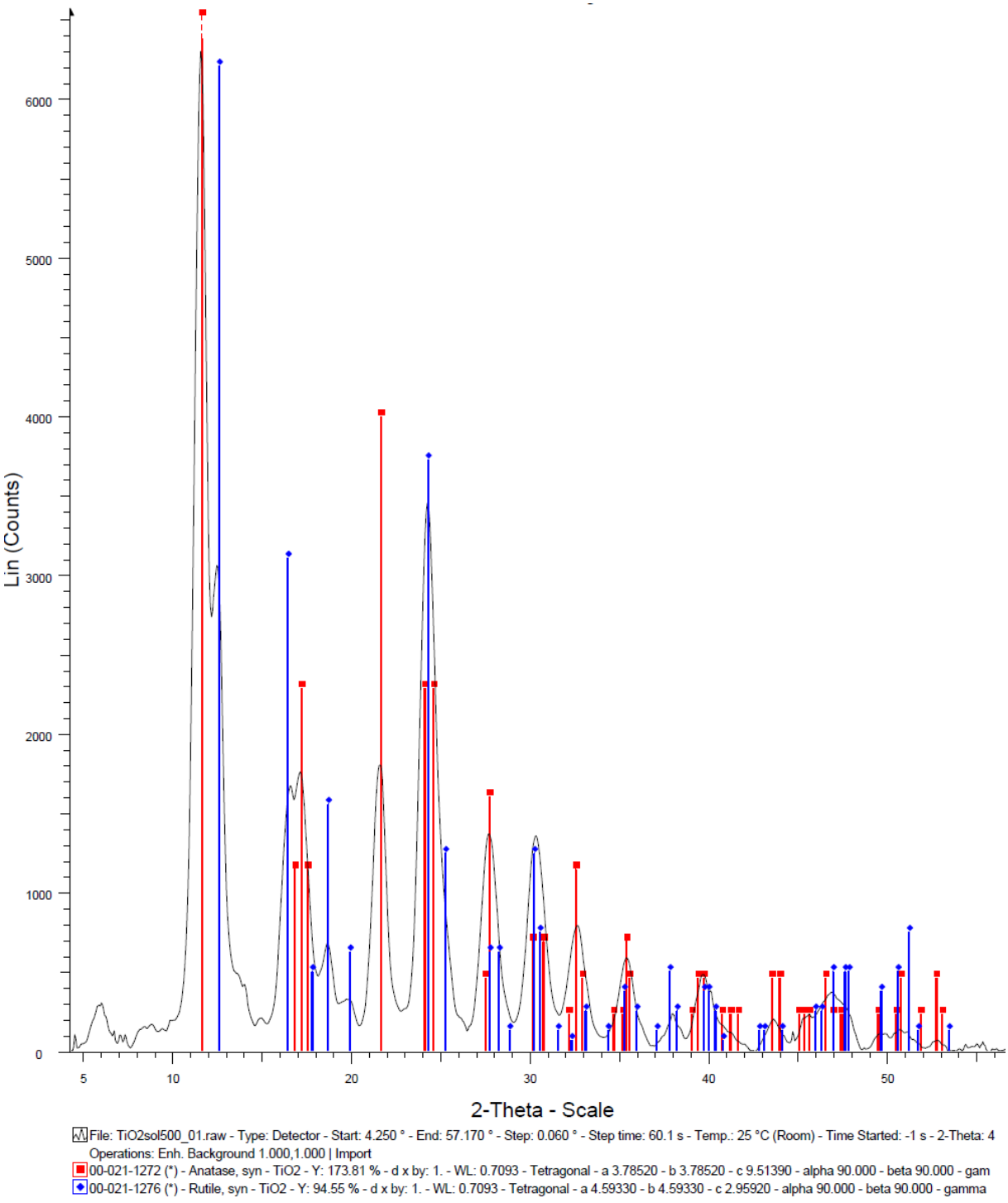


Figure FS3 Phase-corrected Fourier transformed EXAFS spectra of CaptiGel (a, this work) and of crystalline anatase (b, reprinted from R. Bouchet, A. Weibel, P. Knauth, G. Mountjoy, A.V. Chadwick, Chem. Mater. 2003, 15, 4996-5002), in nanopowder (solid line) and bulk sample (dotted line).

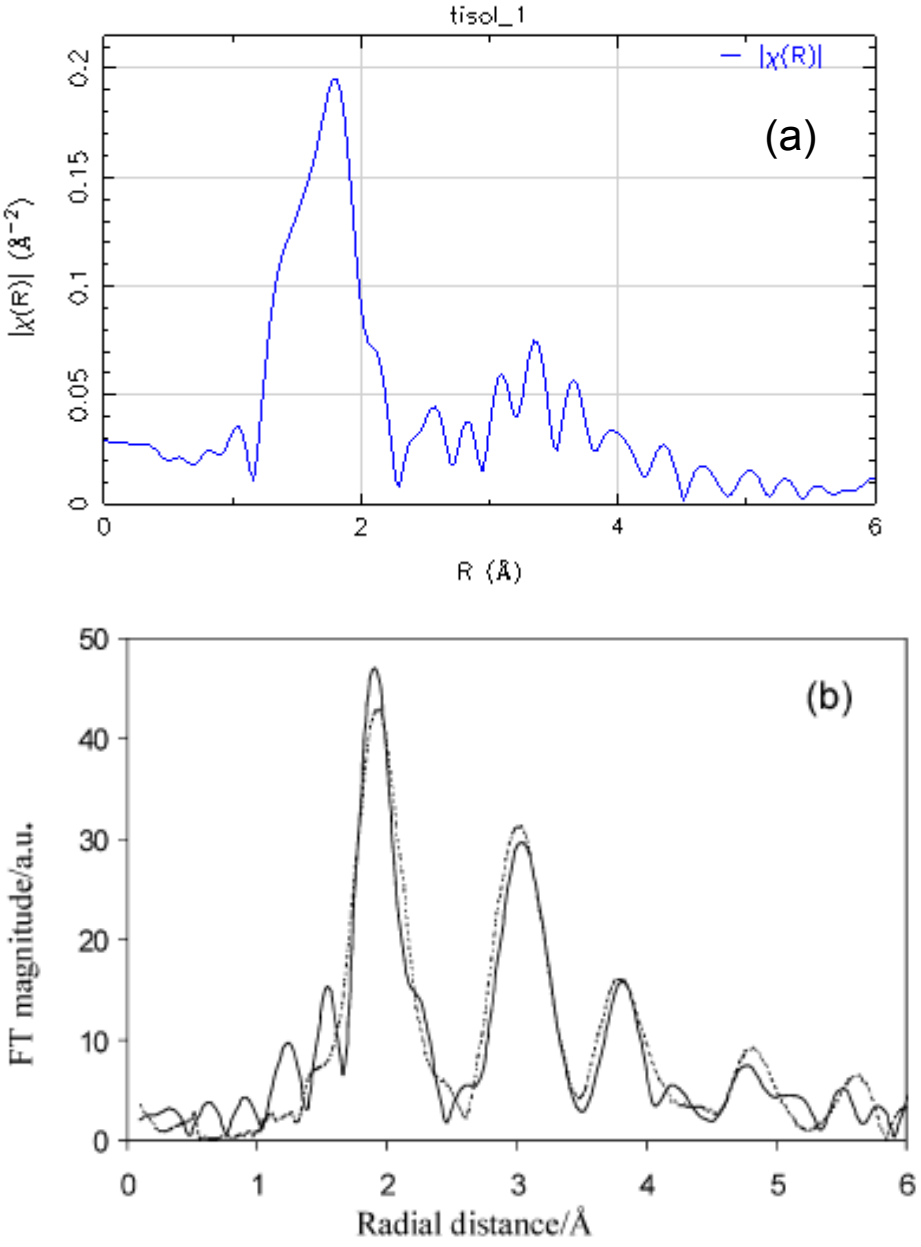


Table TS1 Size-measurement of TiO2, non-dispersed and ultra sonificated

	Direct Run Non-dispersed Z-Ave (dia.nm)	Peak 1 (dia.nm)	%	Peak 2 (dia.nm)	%	Peak 3 (dia.nm)	%	Direct Run Dispersed Z-Ave (dia.nm)	Peak 1 (dia.nm)	%	Peak 2 (dia.nm)	%	Peak 3 (dia.nm)	%
1	59,98	151,4	80,7	6,605	13,3	24,41	4,9	26,71	129,3	75,3	5,079	19,6	0	5,1
2	61,36	142,6	77,3	5,519	9,8	15,49	9,7	24,24	120,7	59,2	4,654	19	19,38	17,6
3	61,27	134,3	77,9	4,011	13,2	10,94	5,1	23,41	114,6	58,4	4,485	18,9	17,04	18,2

	48 h delay Non-dispersed Z-Ave (dia.nm)	Peak 1 (dia.nm)	%	Peak 2 (dia.nm)	%	Peak 3 (dia.nm)	%	48 h delay Dispersed Z-Ave (dia.nm)	Peak 1 (dia.nm)	%	Peak 2 (dia.nm)	%	Peak 3 (dia.nm)	%
1	73,42	125,6	68	6,067	19,2	22,06	10,8	29,39	151,4	61,1	4,763	17,5	21,93	17,5
2	48,53	154,1	66	5,04	15,5	24,92	15,4	63,08	124,6	56,7	4,906	16,9	19,49	16,9
3	86,25	140,9	71	4,364	13,8	15,52	12,7	30,65	123,5	63,3	4,987	17,5	17,8	17,5

Figure FS4 TGA of air-dried crystalline TiBALDH sample

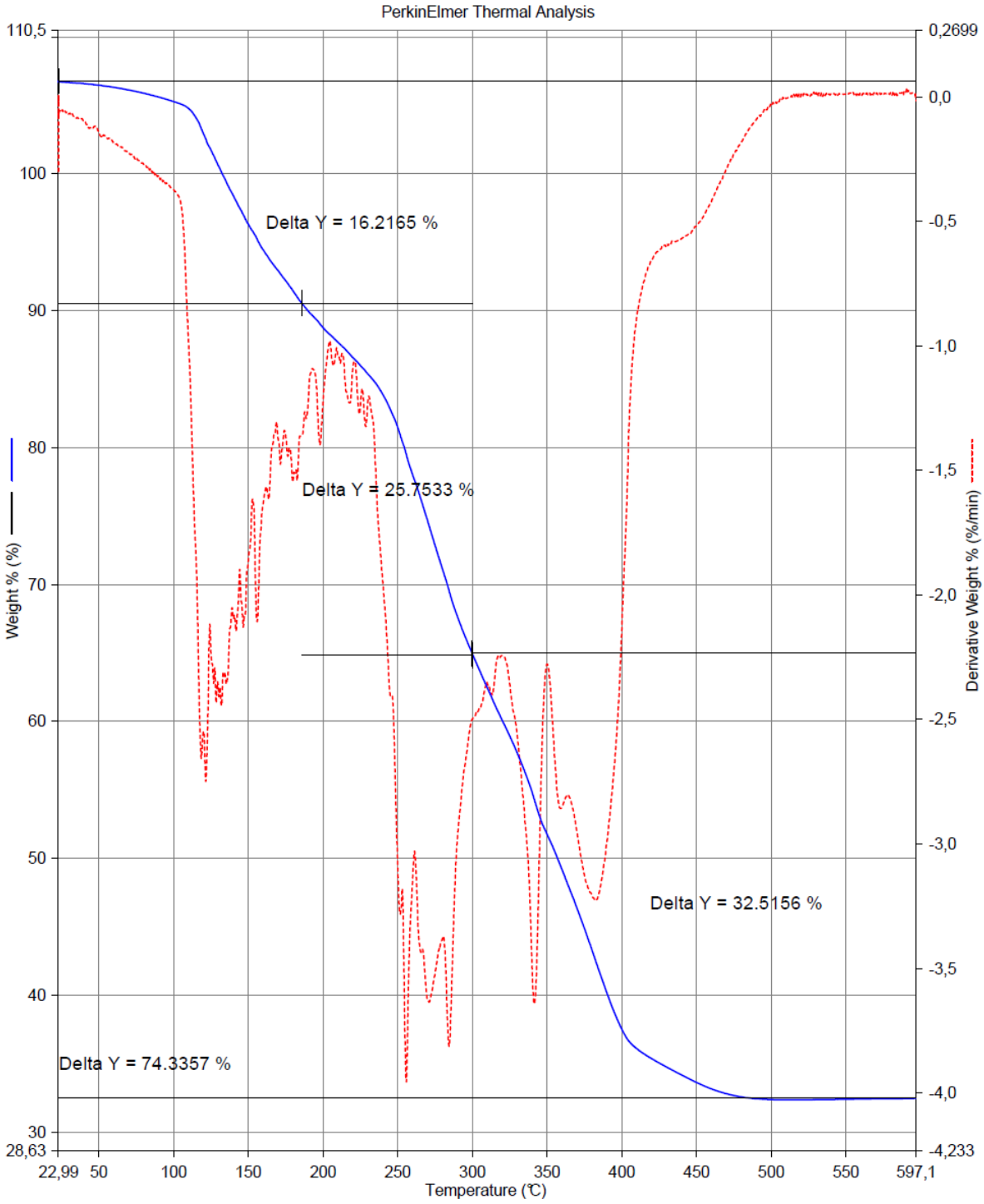
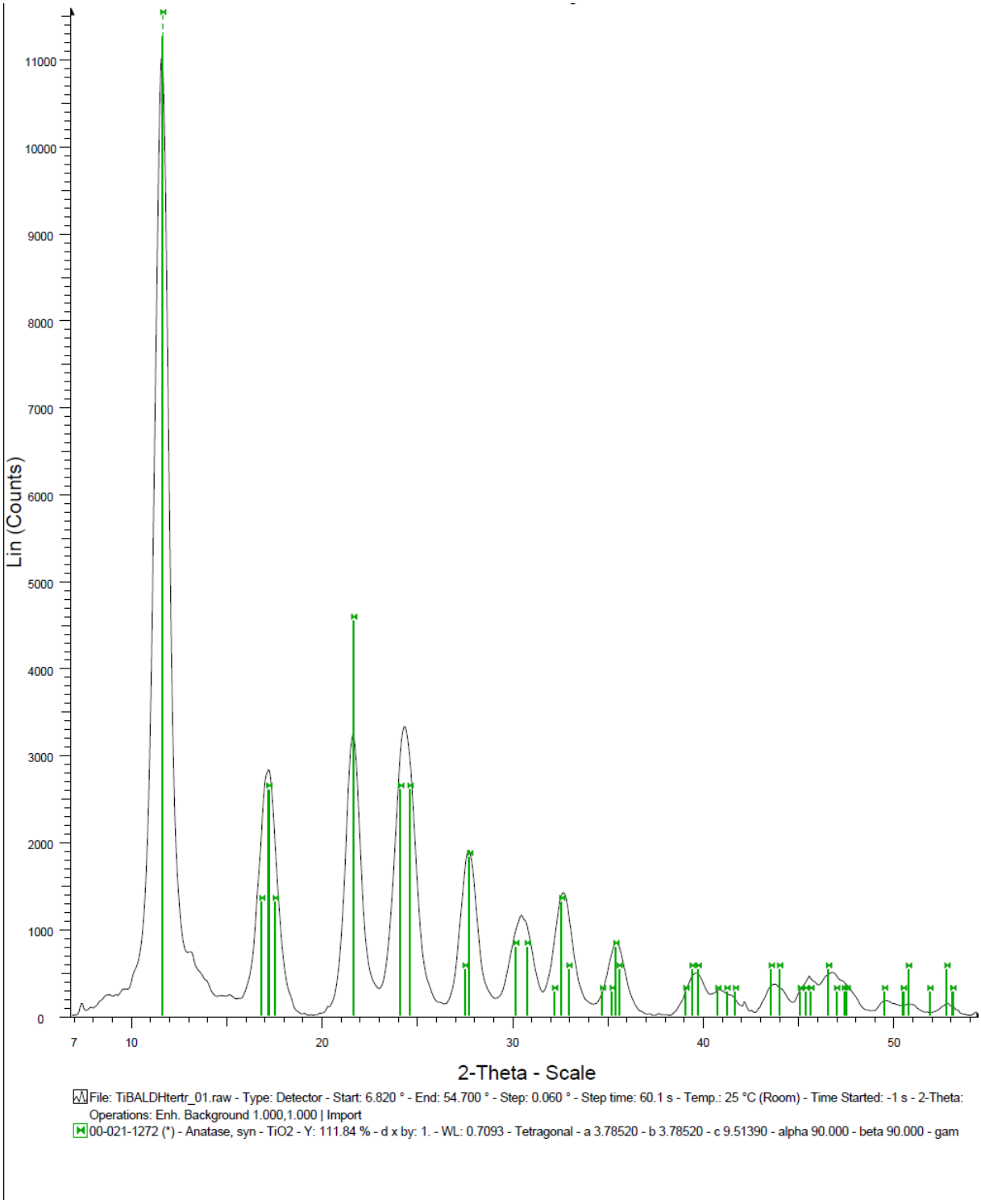


Figure FS5 X-ray powder pattern of the TiO_2 powder produced by heat treatment of TiBALDH at 500°C



Preparation of pollen suspension

A pollen suspension was prepared by collecting stamens of tobacco plants and putting them into a liquid medium. The pollen suspension was filtered through a colander to remove stamens and vacuum filtrated on a filter paper circles. Then filter papers were transferred onto a medium solidified with 0.5% phytagel in small Petri dishes. After removal of the filter paper circles, pollen remains on the surface of the solid medium. Pollen bombardment was performed immediately after plating.

Figure FS6 Working scheme for sample preparation in the shooting experiment:

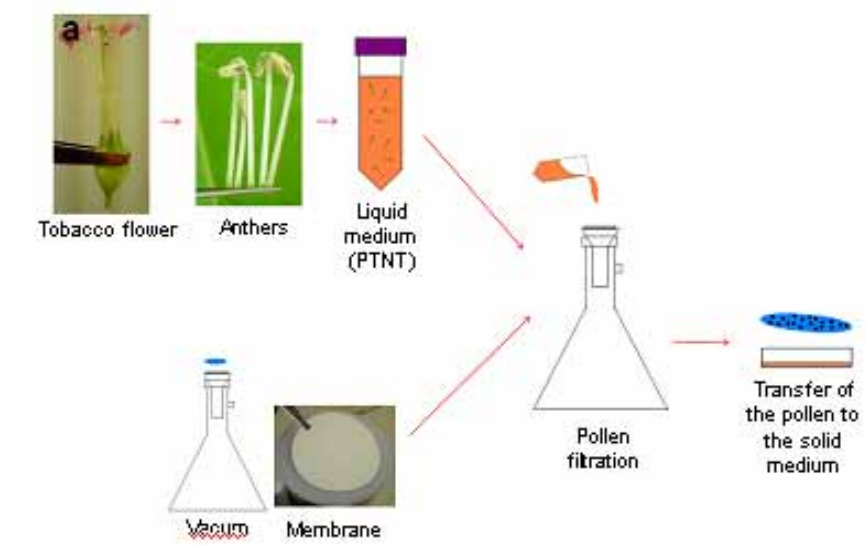


Figure FS7 The shooting a quantified portion of nanoparticles suspension using Bio-rad instrument