Analytical and Bioanalytical Chemistry

Electronic Supplementary Material

Analysis of lipid adsorption on nanoparticles by nanoflow liquid chromatography-tandem mass spectrometry

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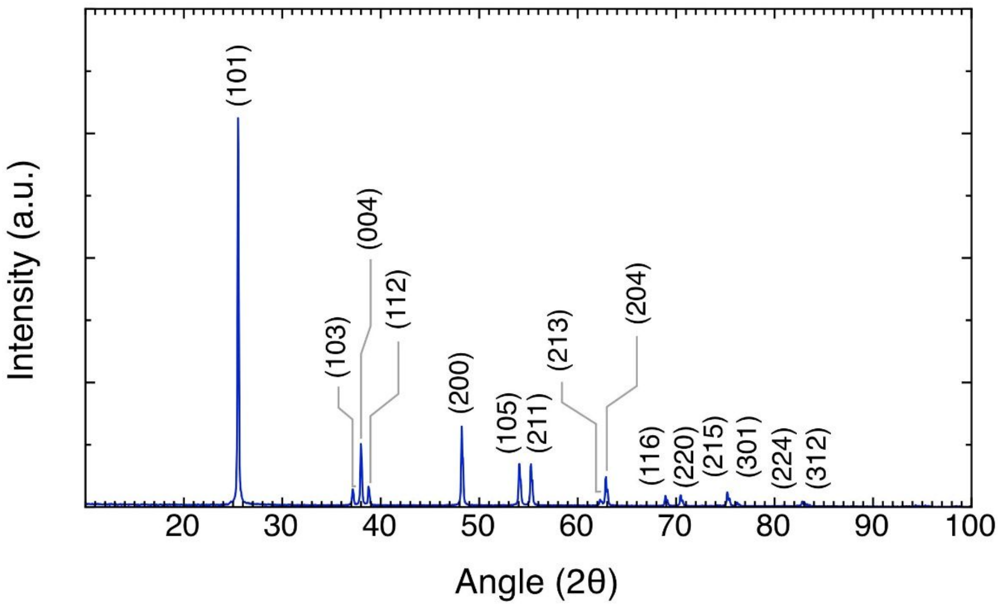

Fig. S1 XRD Pattern for the TiO_2 E171

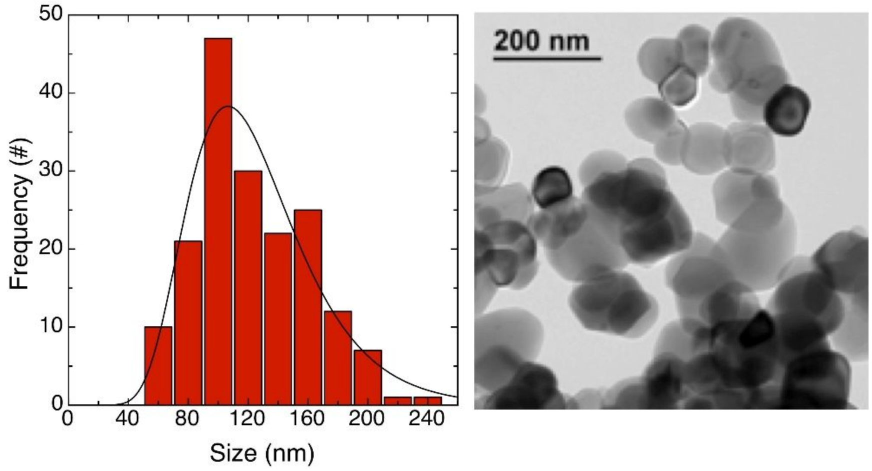

Fig. S2 TEM Feret size distribution for the TiO_2 E171

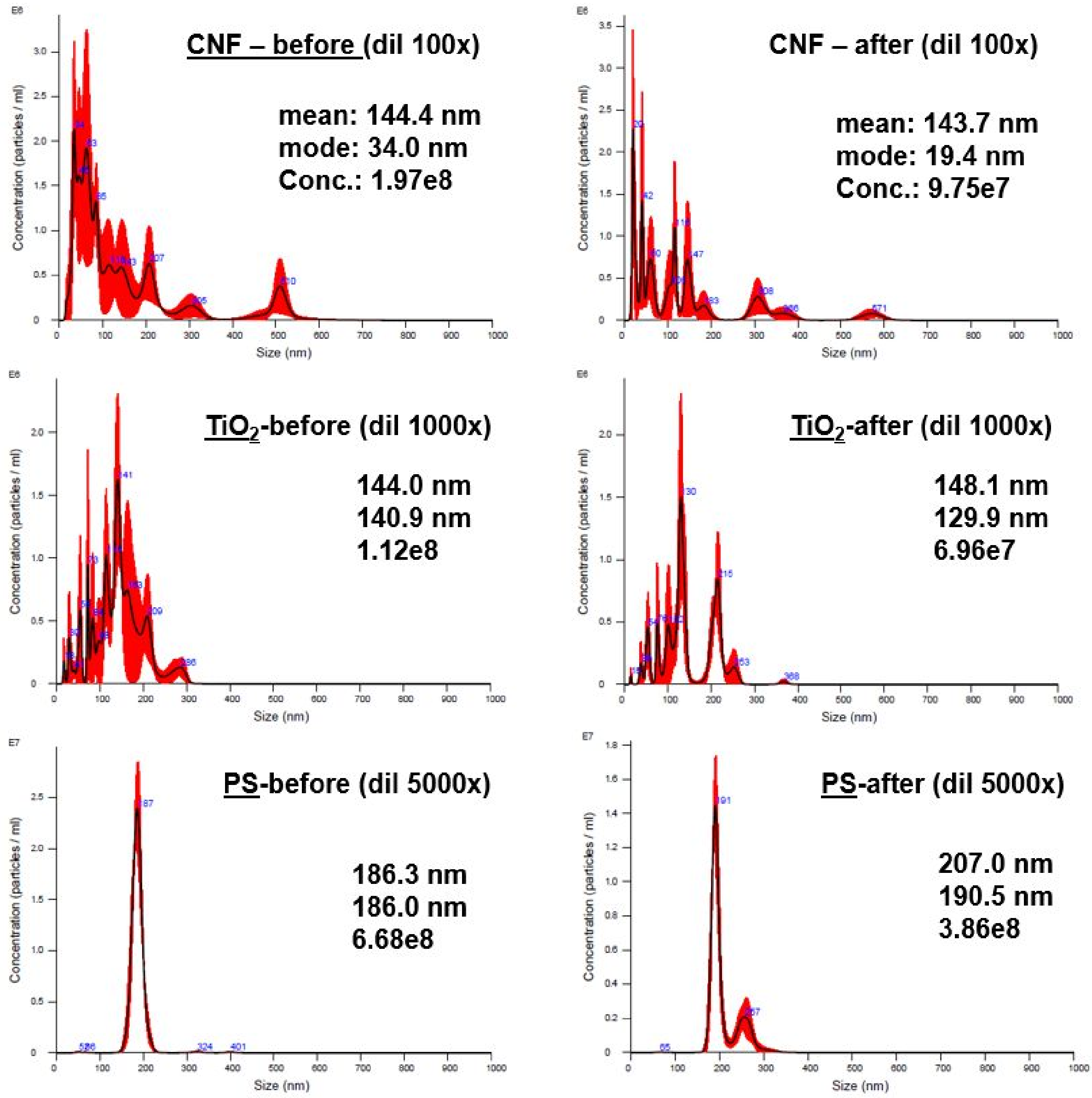

Fig. S3 Profiling of size distribution of CNF, TiO_2 and PS before/after lipid extraction method. Size of all samples were measured three times by nanoparticle tracking analysis (NTA). The NTA is a model NS300 produced from Nanosight Ltd. (Salisbury, UK)

Table S1 Morphological and structural properties of ENMs

ENM	Primary Particle Size				Crystal Structure	
	SSA (m^2/g)	**d_{BET} (nm)**	**d_{TEM} (nm)**	**d_{XRD} (nm)**	**Crystal System**	**Crystallinity (%)**
E171	14.44 ± 0.72	103.2 ± 5.2	113.4 ± 37.2	55.6 nm	Anatase	88.5%

ENM, engineered nanomaterial; SSA by nitrogen adsorption/Brunauer-Emmett-Teller (BET) method; d_{BET}, d_{TEM} and d_{XRD}, particle

Table S2 Physical properties of ENMs

ENM	Shape Factors			Porosity		ρ_{raw} (g/cc)
	Aspect ratio	**Circularity**	**Roundness**	**TPV (cc/g)**	**APS[§] (nm)**	
E171	1.203 ± 0.134	0.942 ± 0.028	0.841 ± 0.087	0.191×10^{-2}	2.65	4.032±0.002

ENM, engineered nanomaterial; TPV and APS, total pore volume and average pore size, respectively determined by nitrogen adsorption/Brunauer-Emmett-Teller (BET) method; ρ_{raw}, the raw density of ENMs determined by nitrogen volume displacement (pycnometry); [§]TEM did not confirm the presence of pores but interparticle spacing instead.

Table S3 Chemical and biological properties of ENMs

ENM	Chemical Elemental Composition				Recombinant	Sterility
	Trace Metal Analysis (%)	**Carbon Content (%)***	**Stoichiometry XPS**	**Stoichiometry ICP-MS**	**Factor C (EU/mg)[£]**	**(bacterial growth observed)[†]**
TiO_2 P25	99.05±5.00 Ti	0.195±0.127	$TiO_{1.97}$	$TiO_{1.87}$	< LOD	No growth

ENM, engineered nanomaterial; LOD, limit of detection; *Elemental plus organic carbon content (w/w); [£]Suspension tested at 10 µg/ml, endotoxins in PBS is 76 EU/ml; [†]suspension tested at 50µg/ml;