Supporting Information



Figure S1: left: schematic illustration of the Microfluidizer MRT CR5; right: detailed structure of the y-formed reaction chamber.¹

1 C. Bergs, P. Simon, Y. Prots and A. Pich, *RSC Adv.*, 2016, **6**, 84777–84786.



Figure S2: XRD diffractograms of the Glc-1P stabilized zinc peroxide nanoparticles synthesized at different cycle numbers (reaction times) (a) and zinc acetate:Glc-1P ratios (b).

$$d = \frac{k\lambda}{\beta \cos\theta}$$

Figure S3: With: k = constant (0.9), λ = wavelength of the X-ray radiation (0.1542 nm), β = FWHM and Θ = diffraction angle



Figure S4: TEM images of the different $ZnO_2/Glc-1P$ samples: A) $ZnO_2/Glc-1P$ (1/1)_10c(4min), B) $ZnO_2/Glc-1P$ (1/1)_20c(8min), C) $ZnO_2/Glc-1P$ (1/1)_30c(12min), D) $ZnO_2/Glc-1P$ (1/1)_40c(16min), E) $ZnO_2/Glc-1P$ (2/1)_30c(12min), F) $ZnO_2/Glc-1P$ (4/1)_30c(12min), G) $ZnO_2/Glc-1P$ (6/1)_30c(12min), H) $ZnO_2/Glc-1P$ (8/1)_30c(12min), I) $ZnO_2/Glc-1P$ (10/1)_30c(12min).



Figure S5: TEM measurements of the ZnO_2 nanoparticles stabilized with AOT (reference for the protein binding measurements), d = 6.1 ± 2.9 nm (average of 100 separately measured nanoparticles).



Figure S6: pH dependent zeta potential measurements for the ZnO_2/AOT sample (black) and a ZnO_2 reference substance (red).



Figure S7: Time dependent oxygen reference measurement of pure water.



Figure S8: Histograms of nanoparticle sizes for the samples synthesized at different reaction times (a) and at different precursor:stabilizer ratios (b). At least 100 separate nanoparticles were measured for each sample.



Figure S9: HR-TEM image of sample ZnO₂/Glc-1P (1/1)_30c(12min).

Table	S1:	Measured	full	width	at	half	maximum	(FWHM)	of	the	reflexes	220	and	311	for	all
synthe	sized	l nanopartic	le sa	amples	i.											

sample	FWHM ₂₂₀	FWHM ₃₁₁
ZnO ₂ /Glc-1P (1/1)_10c(4min)	2.8	3.8
ZnO ₂ /Glc-1P (1/1)_20c(8min)	2.7	3.5
ZnO ₂ /Glc-1P (1/1)_30c(12min)	2.9	3.7
ZnO ₂ /Glc-1P (1/1)_40c(16min)	2.8	3.3
ZnO ₂ /Glc-1P (2/1)_30c(12min)	2.5	2.1
ZnO ₂ /Glc-1P (4/1)_30c(12min)	2.8	2.7
ZnO ₂ /Glc-1P (6/1)_30c(12min)	2.9	2.6
ZnO ₂ /Glc-1P (8/1)_30c(12min)	2.7	2.8
ZnO ₂ /Glc-1P (10/1)_30c(12min)	2.9	2.5