Supporting Information

Realistic Polyethylene Terephthalate Nanoplastics and the Size- and Surface Coating-Dependent Toxicological Impacts on Zebrafish Embryos

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Table S1 Size (TEM, DLS), polydispersity index (PDI) of PET nanoplastics with different capping agents obtained by centrifugation with different speeds.

Type	Centrifugation Speeds (rpm)	Mean SEM size (nm)	DLS size (nm)	PDI	Zeta potential （mV）
PET@BSA	1500	804.24			-20.00±3.00
	4000	71.96	273.67±16.28	0.436±0.040	-24.6±2.10
	10000	32.46	180.93±9.08	0.274±0.040	-25.47±2.46
PET@SDS	1000	887.41			-84.2±2.32
	4000	55.04	315.30±13.00	0.442±0.042	-73.73±3.31
	10000	24.09	206.33±11.30	0.307±0.078	-66.7±6.78

Table S2 Nanoplastics samples for toxicological assessment study.

Sample name	Type	Mean SEM size (nm)	Centrifugation speeds (rpm)
PET_{20}	PET@BSA	32.46	10000
	PET@SDS	24.09	10000
PET_{60}	PET@SDS	55.04	4000
PET_{80}	PET@BSA	71.96	4000
PET_{800}	PET@BSA	804.24	1500
	PET@SDS	887.41	1000

Table S3 The yield of nanoplastics samples with different sizes and different capping agents. 20 g of plastic sheets was removed into a beaker that contained 300 mL of 0.05% BSA solution or 0.01% SDS solution. A hand blender was used to break down the plastics with a working pattern of 1 min of blending alternating with 5 min of resting for a total of 6 h. After blending, the supernatant was subjected to differential centrifugation (500, 1000, 1500, 2000, 4000, 6000, 8000 and 10000 rpm for 20 min) to obtain nanoparticles in different diameter ranges. The precipitations centrifuging with 1000 (or 1500), 4000, and 10000 rpm with SEM size of 20, 60 (or 80) and 800 nm respective were used in the following studies. Each PET nanoparticles solution was cut into two equal pieces; one half was dried for 24 hours in a vacuum drying oven at 40 °C, followed by weighed by millionth analytical balance.

Sample name	Type	Yield (mg)
PET_{20}	PET@BSA	1.92
	PET@SDS	2.18
PET_{60}	PET@SDS	4.84
PET_{80}	PET@BSA	5.28
PET_{800}	PET@BSA	15.72
	PET@SDS	18.27

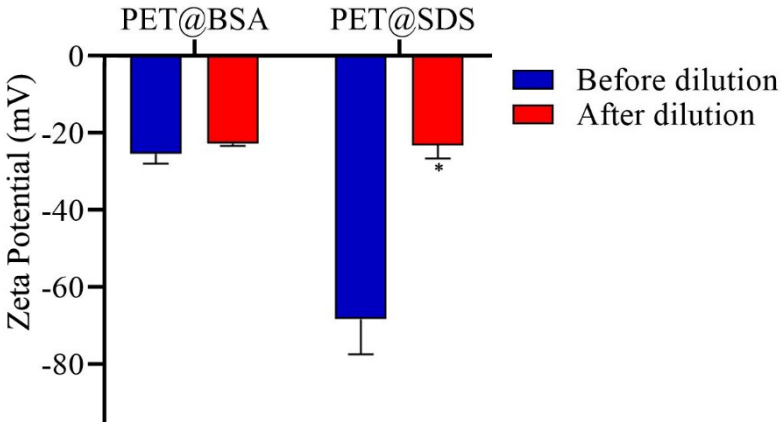

Figure S1 Zeta potential of $PET_{20\text{-}BSA}$ and $PET_{20\text{-}SDS}$ before and after dilution. $^{*}P < 0.05$, versus same capped PET NPs before dilution.

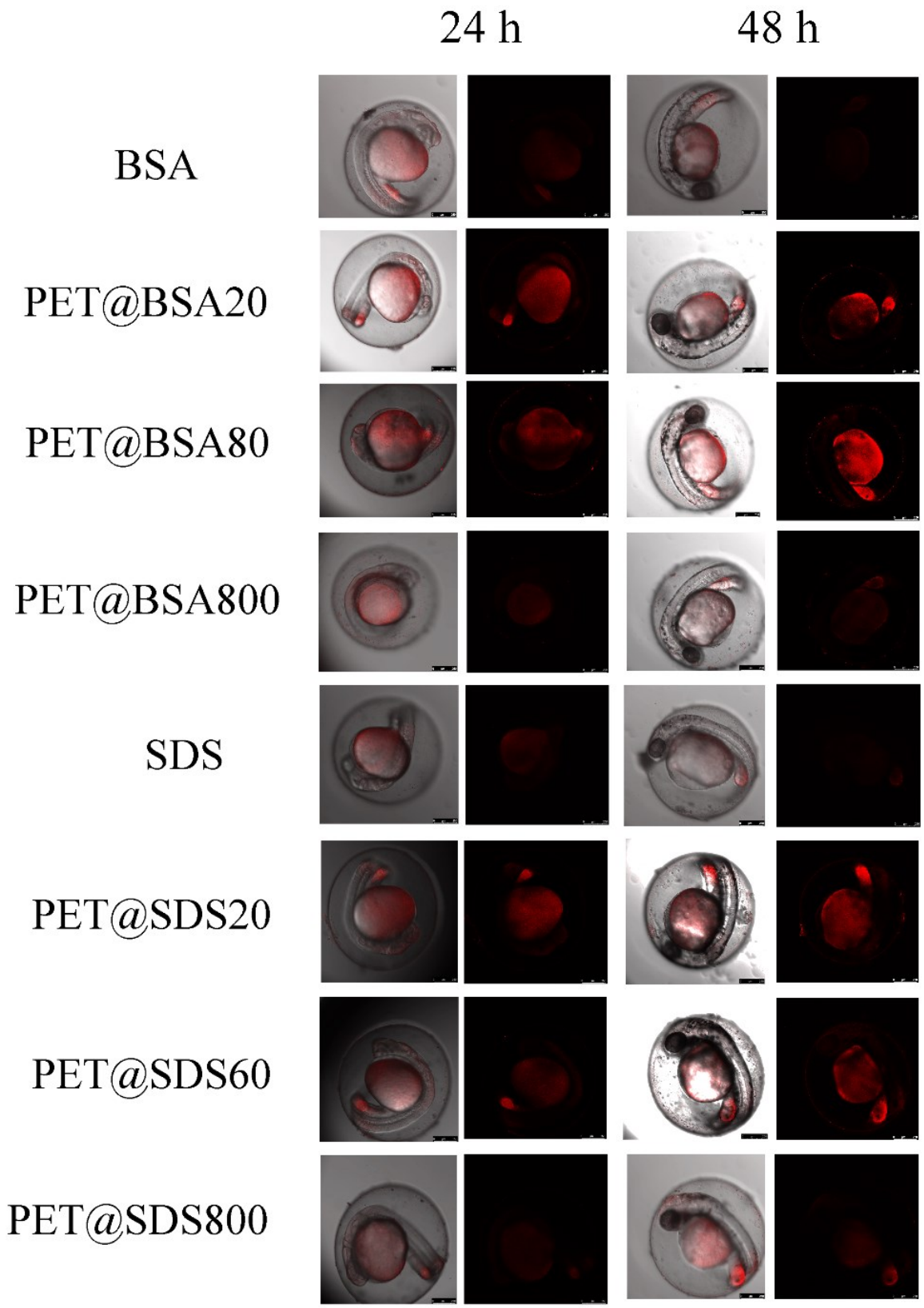

Figure S2 Fluorescent distribution of BAS alone, $PET_{20\text{-}BSA,}$ $PET_{80\text{-}BSA}$ & $PET_{800\text{-}BSA}$, SDS alone and $PET_{20\text{-}SDS,}$ $PET_{60\text{-}SDS}$ & $PET_{800\text{-}SDS}$ at 24 and 48 hpf.

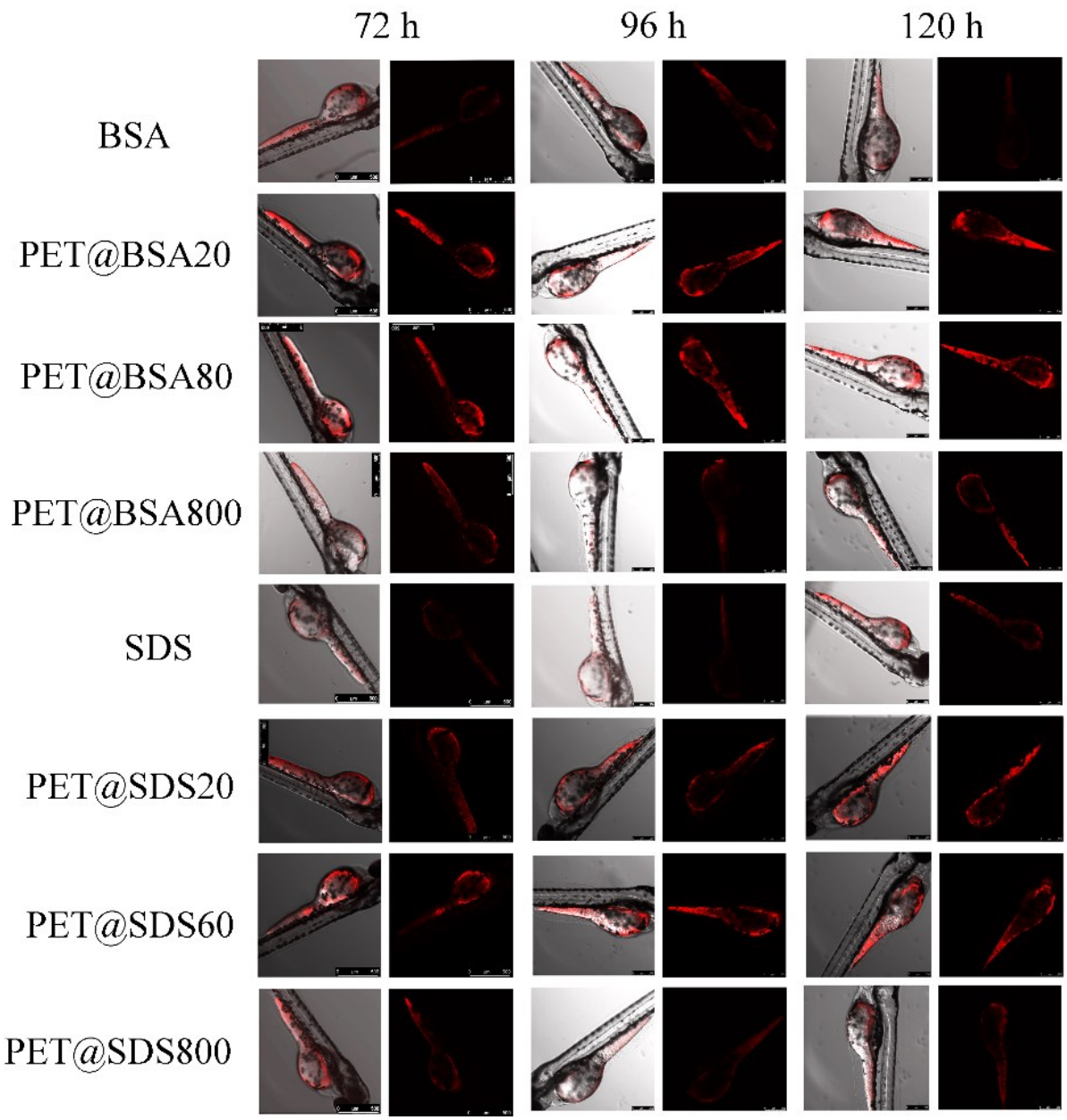

Figure S3 Fluorescent distribution of BAS alone, $PET_{20\text{-}BSA,}$ $PET_{80\text{-}BSA}$ & $PET_{800\text{-}BSA}$, SDS alone and $PET_{20\text{-}SDS,}$ $PET_{60\text{-}SDS}$ & $PET_{800\text{-}SDS}$ at 72, 96 and 120 hpf.

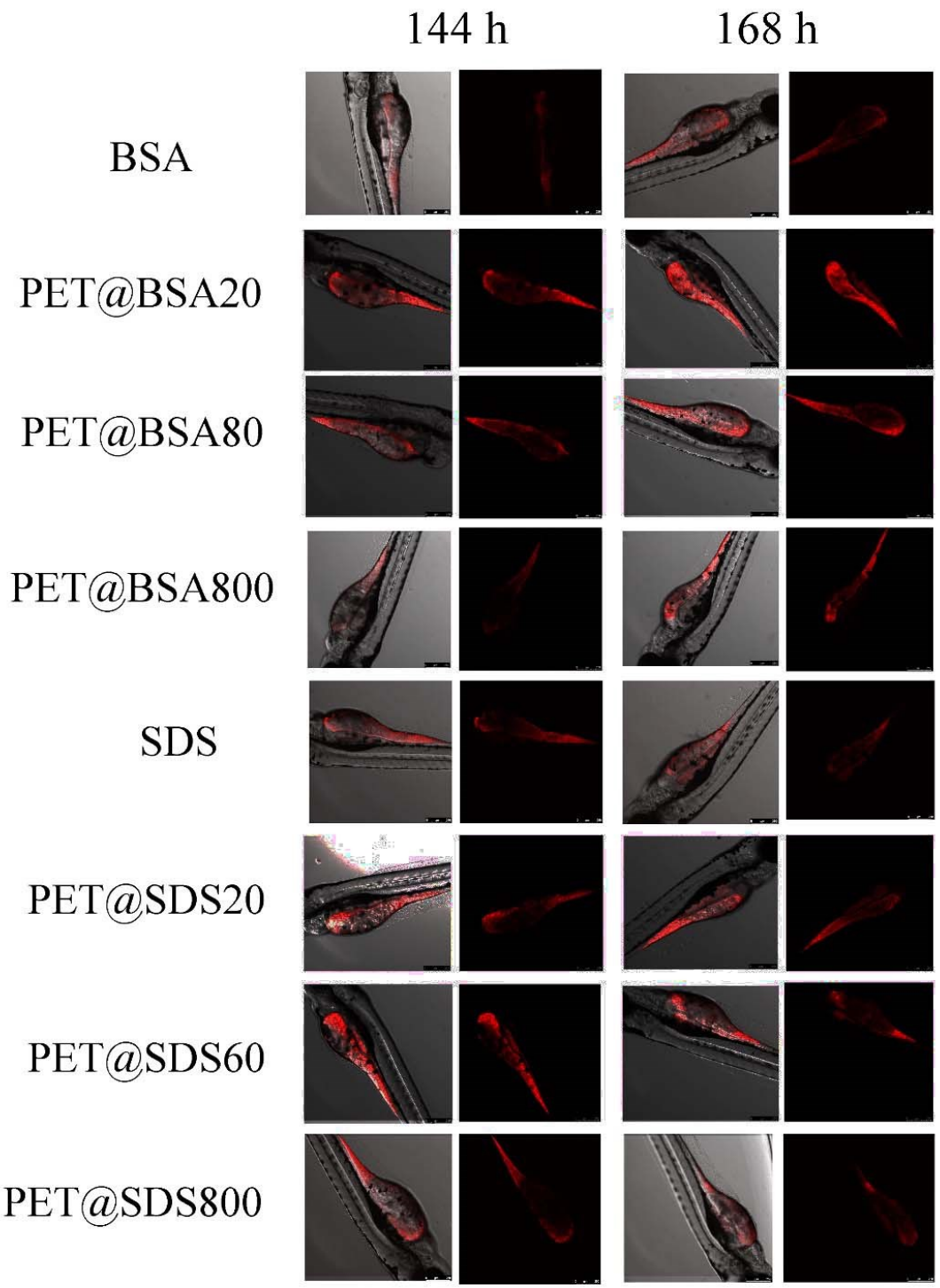

Figure S4 Fluorescent distribution of BAS alone, $PET_{20\text{-}BSA,}$ $PET_{80\text{-}BSA}$ & $PET_{800\text{-}BSA}$, SDS alone and $PET_{20\text{-}SDS,}$ $PET_{60\text{-}SDS}$ & $PET_{800\text{-}SDS}$ at 144 and 168 hpf.