Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Emerging investigator series: Chemical transformation of silver and zinc oxide nanoparticles in the simulated human tear fluids: Influence of biocorona

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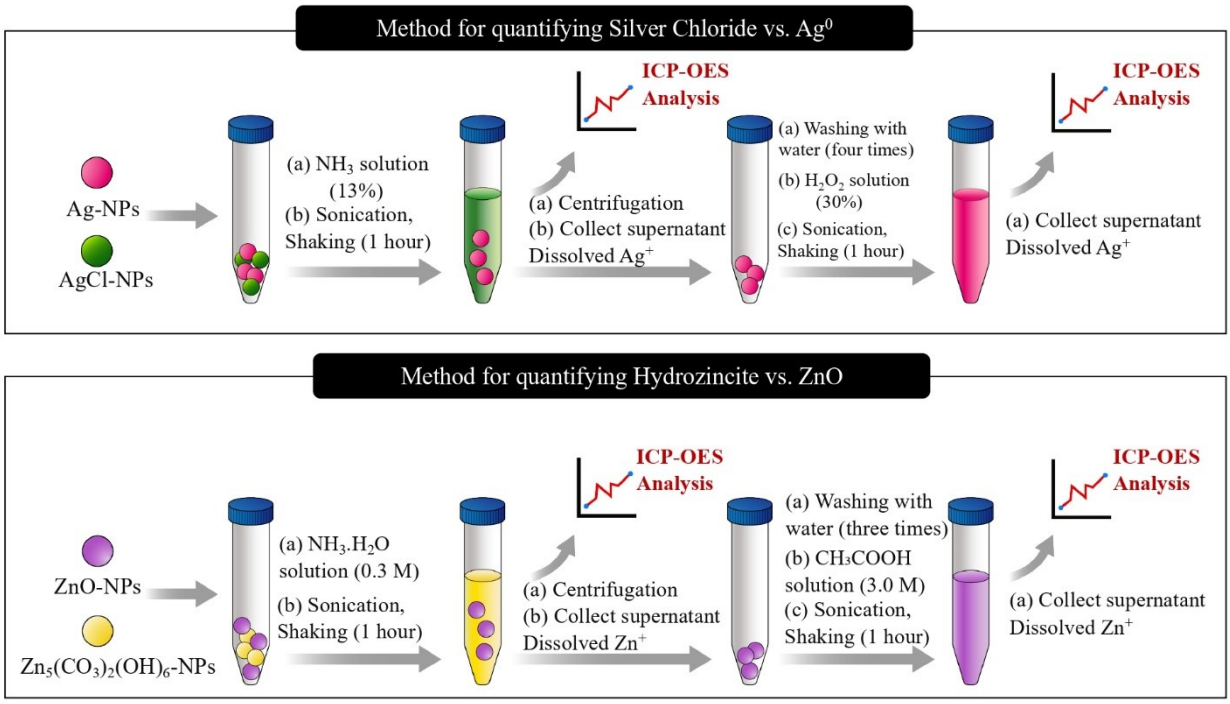

Scheme S1. Schematic representation of the experimental procedure for the selective dissolution of AgCl-NPs against Ag-NPs or $Zn_5(CO_3)_2(OH)_6$-NPs against ZnO-NPs.

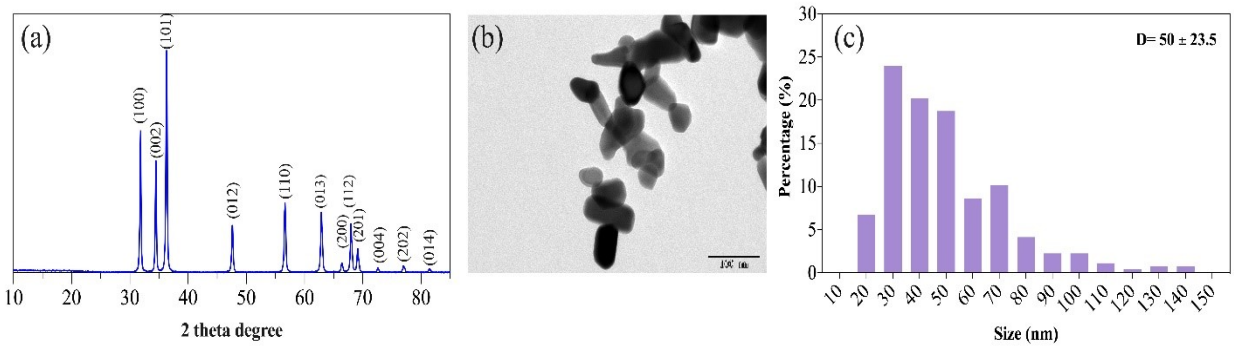

Figure S1. Physicochemical characterization of pristine ZnO-NPs used in this study.

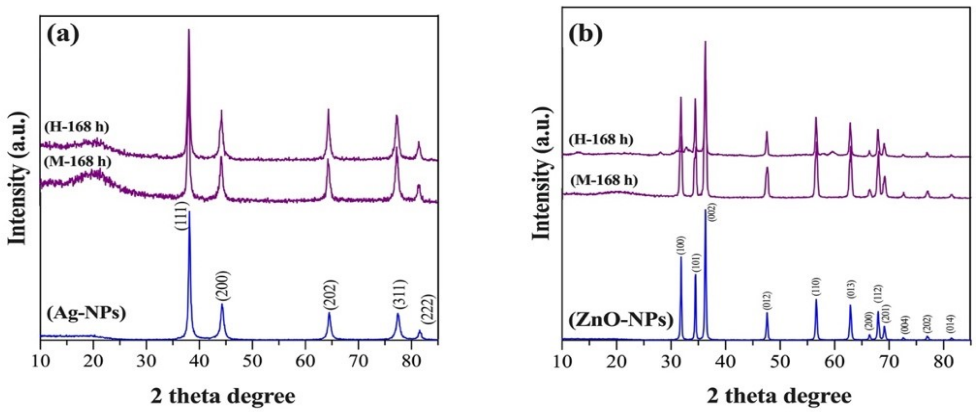

Figure S2. XRD spectra of pristine Ag-NPs and ZnO-NPs and their transformed products from the STF-1 with middle and high particle loadings. (a) Ag-NPs. (b) ZnO-NPs.

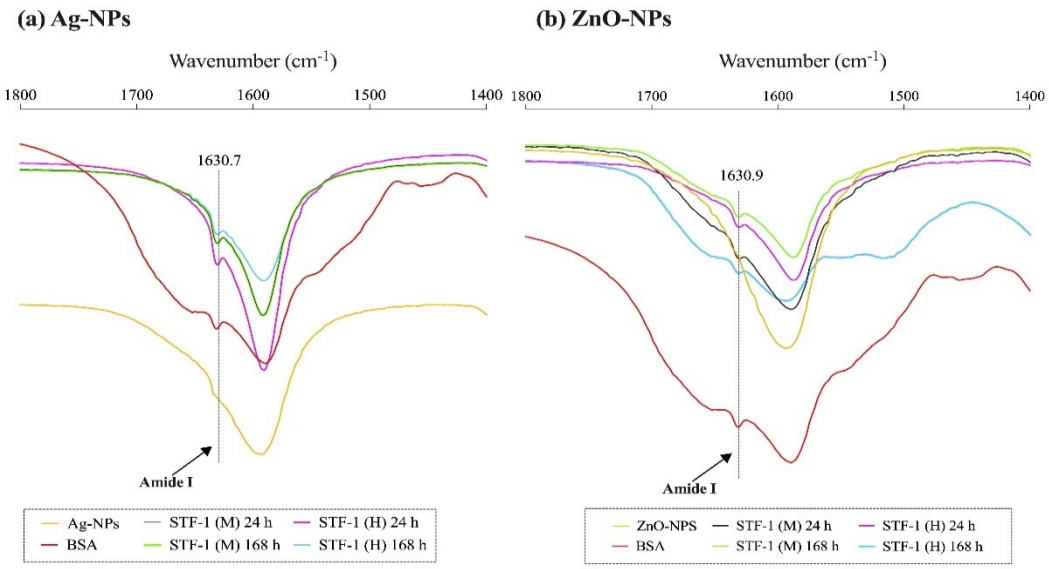

Figure S3. FT-IR spectra of precipitate collected from the STF-1 with Ag-NPs or ZnO-NPs. (a) Ag-NPs. (b) ZnO-NPs.

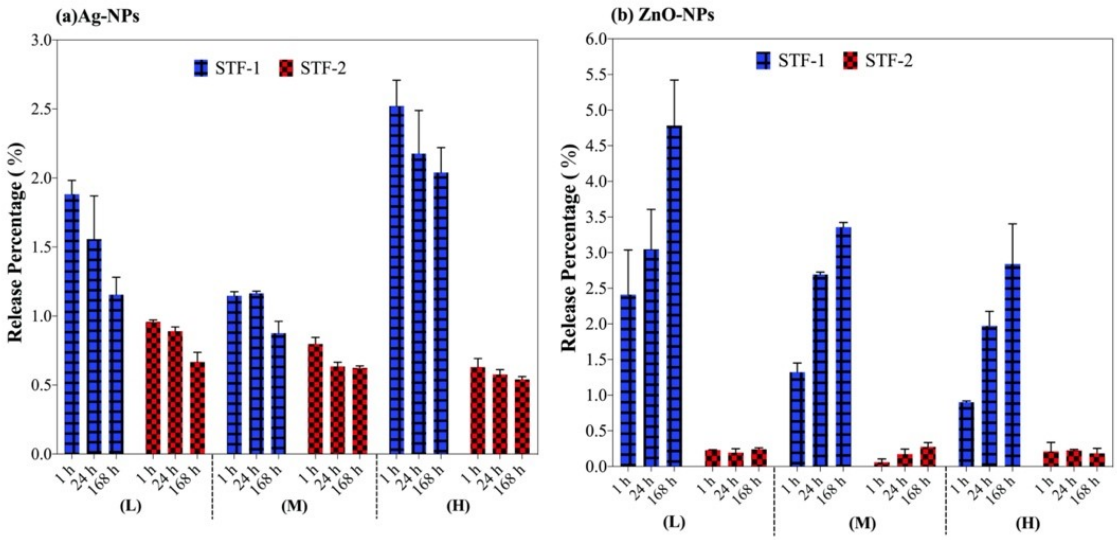

Figure S4. The dissolution of Ag-NPs and ZnO-NPs in the simulated tear fluids. The percentage represented the dissolved ions accounting for nanoparticles added at the beginning of exposure.

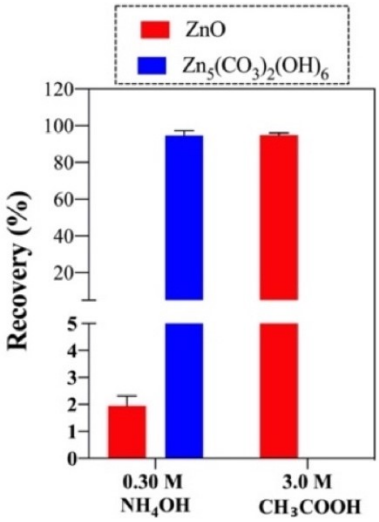

Figure S5. Selective dissolution of $Zn_5(CO_3)_2(OH)_6$ against ZnO by using ammonia solution (0.3 M) and acetic acid solution (3.0 M).

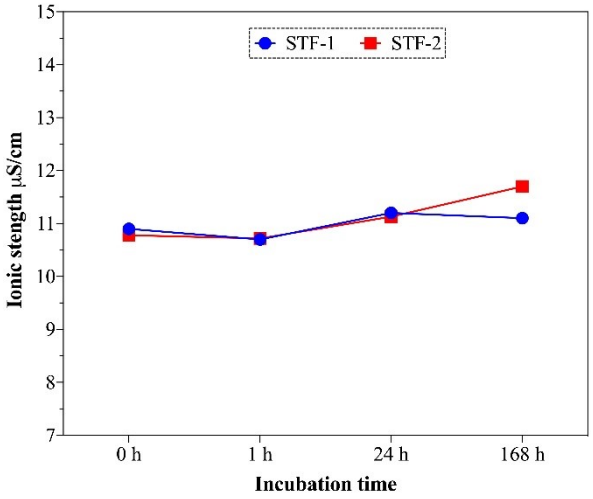

Figure S6. Ionic strength of STF-1 and STF-2 as a function of incubation time.

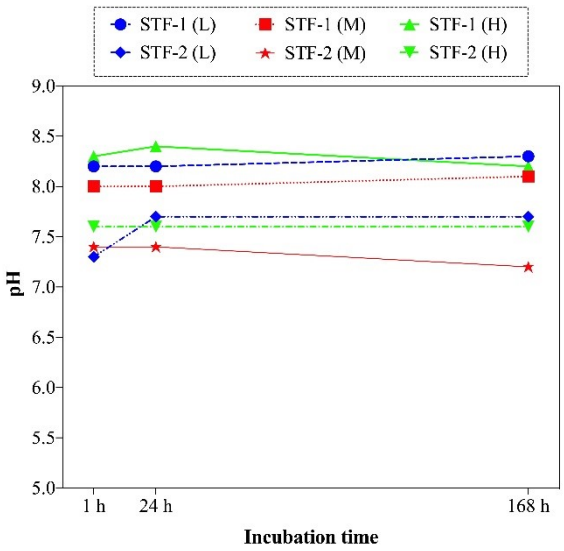

Figure S7. pH of STF-1 and STF-2 as a function of incubation time.

Table S1. Composition of the simulated tear fluids used in this study

	Concentration (g/L)	
Chemical composition	STF-1 (pH 8.0)[1]	STF-2 (pH 7.4)[2]
Sodium bicarbonate	2.18	1.924
Sodium chloride	6.78	6.782
Potassium chloride	1.38	1.11
Calcium chloride	0.0084	0024
Albumin (BSA)	6.69	
Glucose	0.025	

Table S2. sp-ICP-MS instrumental and analytical details.

Parameter group	Parameter	Parameter value
ICP-MS component	ICP-MS model	Agilent 7900
	Nebulizer	MicroMist, glass
	Spray chamber	Quartz
ICP-MS settings	RF power	1550 W
	Nebulizer gas flow	1.00 L/min
	Sample flow rate	0.270 mL/min
	Dwell time	100 µs
	Total acquisition time	60 s
	Data acquisition mode	TRA
Reaction gas	No gas	$^{107}Ag^{+}$, $^{197}Au^{+}$
	He	$^{66}Zn^{+}$

TE (%): 6.8-8.5

References

1. Hedberg, Y.; Gustafsson, J.; Karlsson, H. L.; Moller, L.; Wallinder, I. O. Bioaccessibility, bioavailability and toxicity of commercially relevant iron- and chromium-based particles: in vitro studies with an inhalation perspective. *Part. Fibre. Toxicol.* 2010, 7, 23.
2. Margues, M. R. C.; Loebenberg, R.; Almukainzi, M. Simulated biological fluids with possible application in dissolution testing. *Dissolut. Technol.* 2011, 18, 15-28.