

CuO nanoparticles penetration through intact and damaged human skin

Ilaria Zanon^{a,b}, Matteo Crosera^c, Simona Ortelli^a, Magda Blosi^{a}, Gianpiero Adami^c, Francesca Larese Filon^b,
Anna Luisa Costa^a*

^a *CNR-ISTEC-National Research Council of Italy, Institute of Science and Technology for Ceramics, Via Granarolo 64 I-48018, Faenza, RA, Italy. E mail: magda.blosi@istec.cnr.it*

^b *Clinical Unit of Occupational Medicine, Department of Medical and Surgical Sciences, University of Trieste, Via della Pietà 2/2, 34129 Trieste, Italy.*

^c *Department of Chemical and Pharmaceutical Sciences, University of Trieste, via L. Giorgieri 1, 34127 Trieste, Italy.*

New Journal of Chemistry - ESI

Table S1: Hydrodynamic diameters (d_{DLS}) and ζ -potentials (ζ -potELS) of CuO NP dispersed in synthetic sweat (100 mg L^{-1}).

<i>N° batch</i>	<i>After 1h</i>			<i>After 24h</i>		
	<i>pH</i>	<i>d_{DLS} (nm)</i>	<i>ζ-potELS (mV)</i>	<i>pH</i>	<i>d_{DLS} (nm)</i>	<i>ζ-potELS (mV)</i>
1	5.8	7385 ± 1619	-7.2 ± 0.6	5.8	8889 ± 1360	-4.4 ± 0.4
2	5.8	3561 ± 1054	-5.5 ± 0.5	5.6	2233 ± 246	-6.3 ± 0.2
3	5.7	4567 ± 1209	-7.2 ± 0.2	5.5	3109 ± 752	-6.9 ± 0.3

Table S2: Measurements of static dissolution ($\text{Cu}_{dissolved}/\text{Cu}_{total}$ weight ratio %) of CuO NP dispersed in synthetic sweat (100 mg L^{-1}).

<i>N° batch</i>	<i>After 1h</i>	<i>After 24h</i>
	<i>Cu_{dissolved}/Cu_{total} weight ratio %</i>	<i>Cu_{dissolved}/Cu_{total} weight ratio %</i>
1	10.9	13.6
2	17.3	21.6
3	20.4	25.6
AVERAGE	16.2 ± 4.9	20.3 ± 6.1

Table S3: Copper skin penetration at 24 h obtained by ICP-OES measurements.

	Epidermis penetration ($\mu\text{g cm}^{-2}$)	Dermis penetration ($\mu\text{g cm}^{-2}$)	Total penetration ($\mu\text{g cm}^{-2}$)
Intact skin	1.05 ± 0.45	0.40 ± 0.03	1.45 ± 0.42
Damaged skin	2.73 ± 1.90	7.09 ± 5.78	9.82 ± 7.67