

Understanding dissolution rates via continuous flow systems with physiologically relevant metal ion saturation in lysosome – Supplementary Material

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Table S1: Descriptors and properties of tested engineered nanomaterials. Reproduced from Wohlleben et al. (Nanoscale, 2019).

	descriptors	NM110_ZnO		NM111_ZnO		CuO		NM105_TiO2_nano		TiO2_non-nano		NM600_Bentonit		IRMM385_Kaolin		Kaolin		IRMM381_BaSO4 non-nano		IRMM387_NM220_BaSO4	
		1314-13-2	80	24	21	204	1362	181	279	234	32										
Composition	CAS no.	1314-13-2	80	24	21	204	1362	181	279	234	32										
Primary particle dimension	median diameter, nm	42	80	24	21	204	1362	181	279	234	32										
Specific surface area (BET/VSSA)	BET, m ² /g	12	14	34	51	15	52	16	24	2.5	41										
	% C	30	67.9	7	9																17
	% O	38	24.3	47	63																52
	% metals	38	4.3	46	29																13
	% non metals	3	3.5																		17
Surface charge (zeta-potential)	Zeta potential at pH7, mV	30	-25	-34	-17	36	-31		-53	-37	-37										
Hydrophobicity	water contact angle	10	152	10	60	10	10	10	10	10	10										
Solubility in water	OECD screening LoD or value, metal ion, ppm	3.6	3.3	97	ns	ns	0.1		0.8		6										

Table S2: Chemical composition of phagolysosomal simulant fluid (PSF) as reproduced from Keller et al. (Sci. Rep., 2020)

Substance	PSF pH4.5
NaCl	6650
Na ₂ HPO ₄	142
Na ₂ SO ₄	71
CaCl ₂ 2H ₂ O	29
KH-Phthalate	4085
Glycine	450
alkylbenzylidimethylammonium chloride (ABDC)	50

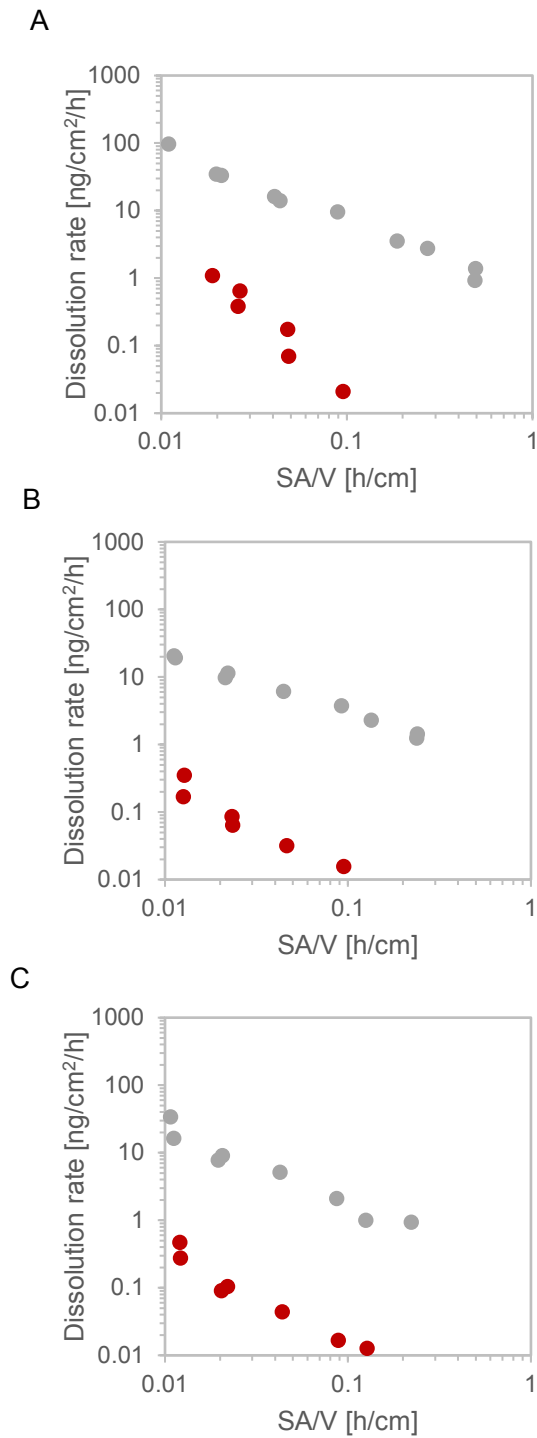


Figure S3: Dissolution kinetic of three different Aluminosilicates. Grey indicates the dissolution of Si ions, whereas red indicates the dissolution kinetic of Al ions. A) Bentonit NM600, B) Kaolin JRC-IRMM385, C) Kaolin (from nanoGRAVUR).

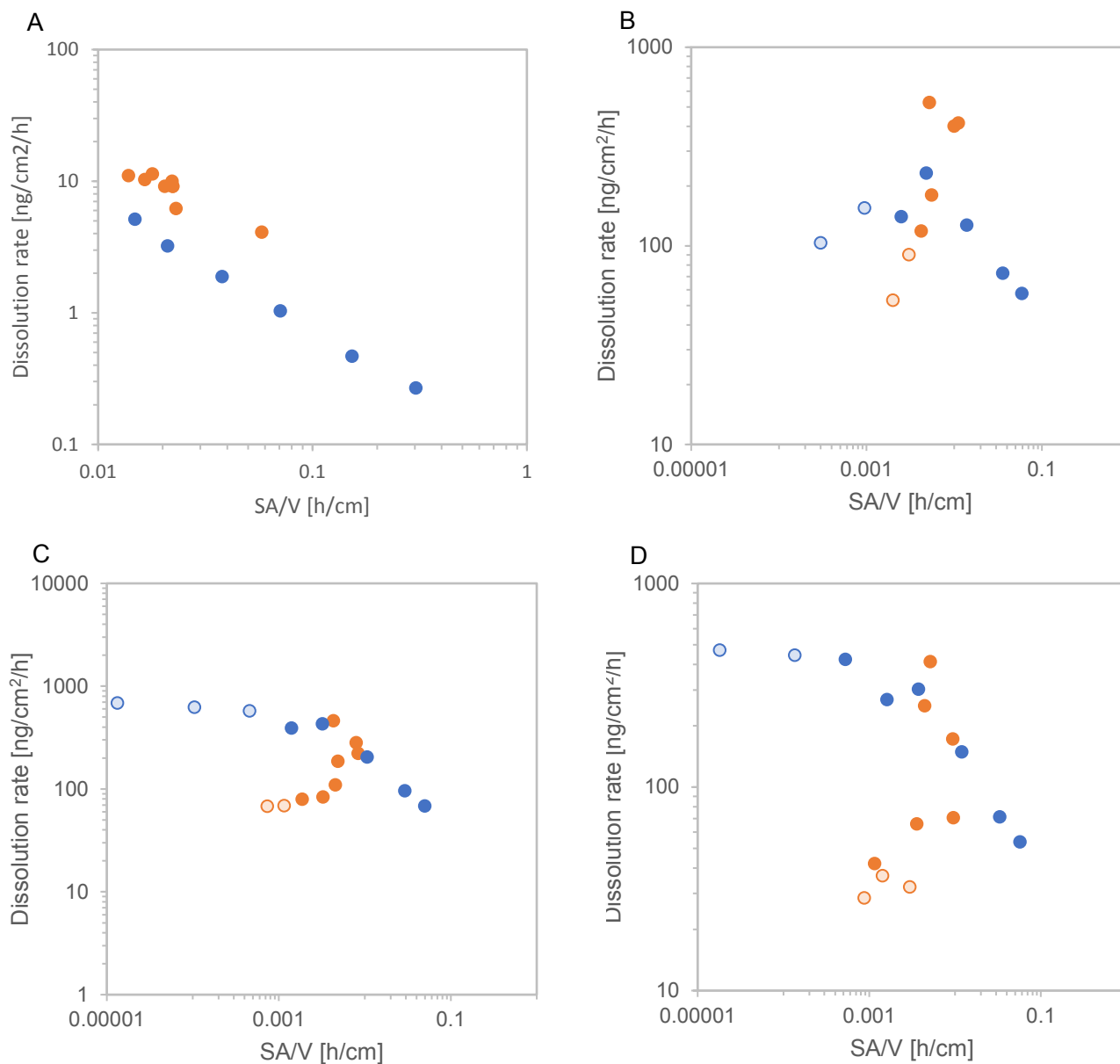


Figure S3: Comparison of SA/V vs. dissolution rate k between the fixed flow-rate dissolution setup (orange) and the ramped flow-rate dissolution setup (blue) for **A** BaSO₄ NM220, **B** CuO, **C** ZnO NM110 and **D** ZnO NM111. Unfilled circles indicate points with low reliability due to remaining mass <10%.