Electronic Supplementary Material (ESI) for Materials Advances.

Mimicking bone-metal exchanges with synthetic nanocrystalline apatite

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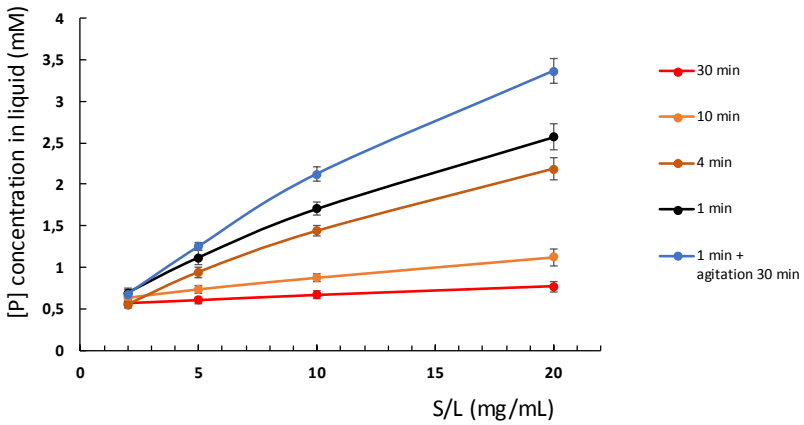

Figure SI1 P concentration in solution after 1h exchange with buffer solution at pH=7.4 as a function of solid/liquid ratio with apatites prepared after precipitation controlled with different addition duration (1 to 30 min) of the Ca solution.

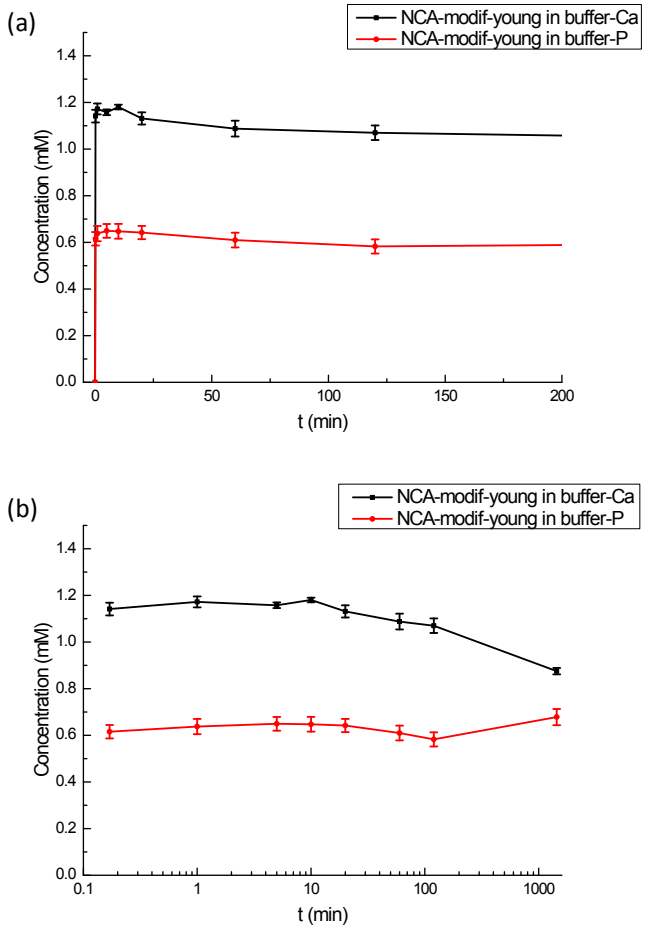

Figure SI2 Evolution of Ca and P concentrations after contact between a buffered solution at pH = 7.4 - and NCA-modif-young apatite (available solid surface set to 2.5 m^2/mL) (a) using a linear scale on short times, and (b) using a logarithmic scale over 24 h.

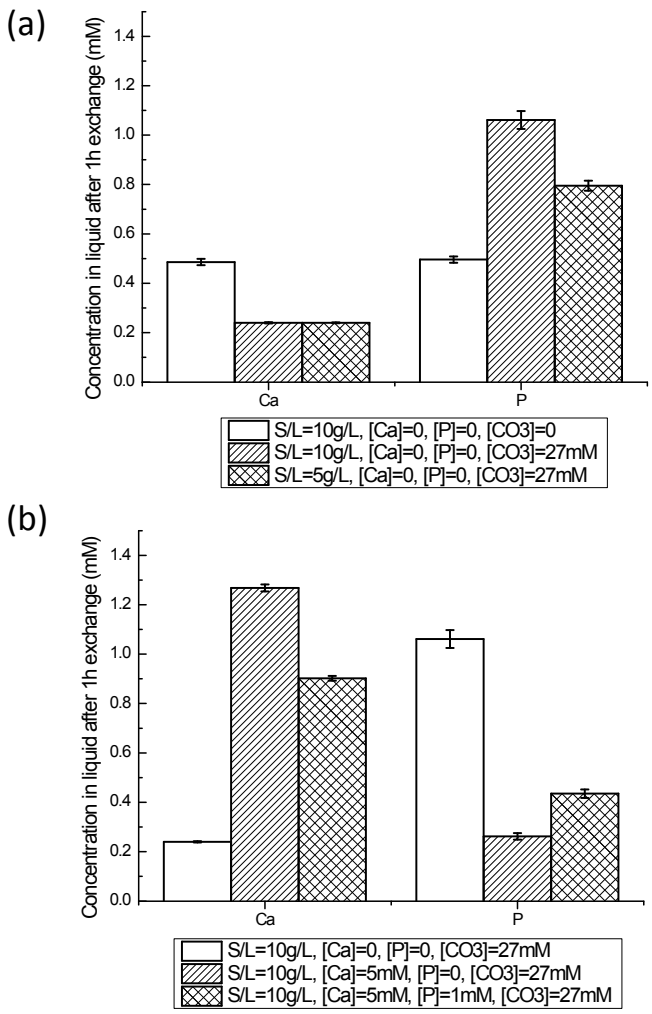

Figure SI3 Ca and P liquid concentration after NCA-modif-mature exchange with buffered solutions at pH=7.4 for different initial conditions after 1 h. The influence from carbonate, solid/liquid ratio (a), and initial Ca and P concentration in solution (b) on exchange behavior are illustrated. (S/L, solid to liquid ratio in g/L; [Ca], [P] and [CO_3] are initial Ca, HPO_4^{2-}, and HCO_3^- concentration before exchange)

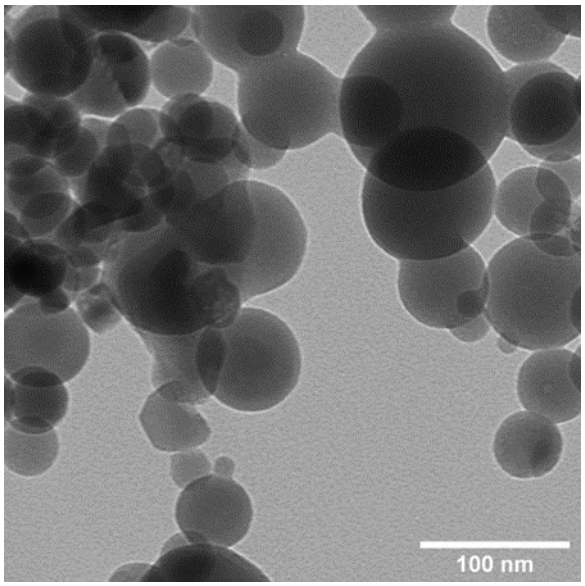

Figure SI4 TEM image of crystalline apatite

Table SI1 Principal features of crystalline apatite

Sample	Ca (wt %)	P (wt %)	CO_3 (wt %)	Ca/P	Specific surface (m^2/g)	Mean crystal size (Å)	
						(002)	(130)
Cryst-HA	39.6 ± 0.3	17.7 ± 0.3	1.6	1.74	45 ± 5	395	290

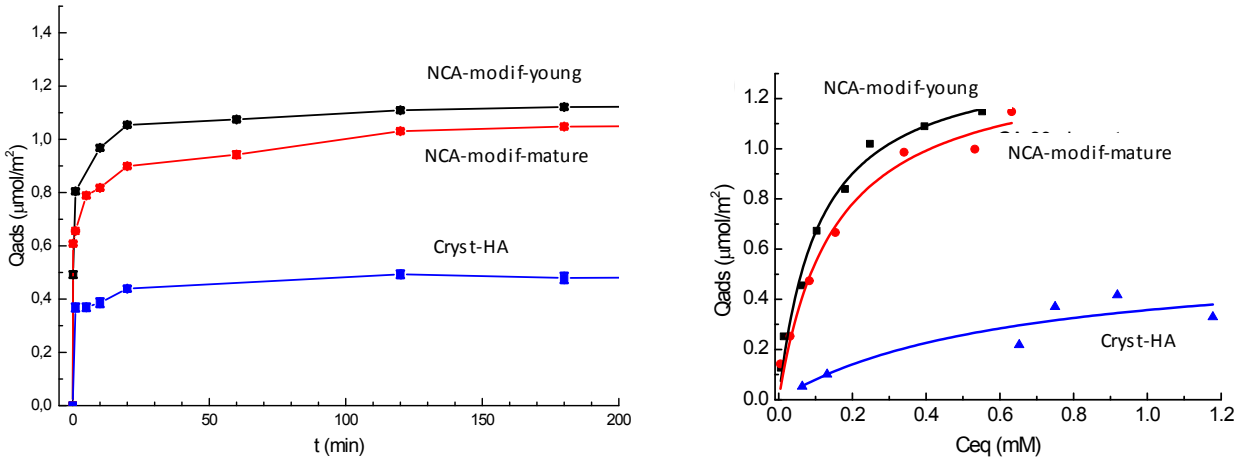

Figure SI5 Comparison of results obtained during U(VI) sorption experiments (buffer pH=7.4) between NCAs and Cryst-HA: kinetic and thermodynamic data.