

Origin of Gypsum Growth Habit Difference as Revealed by Molecular Conformations of Surface-Bound Citrate and Tartarate

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SEM images

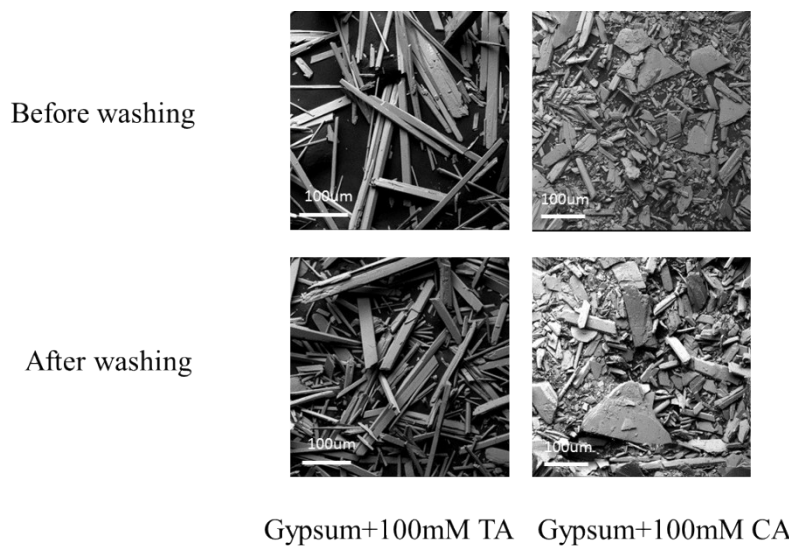
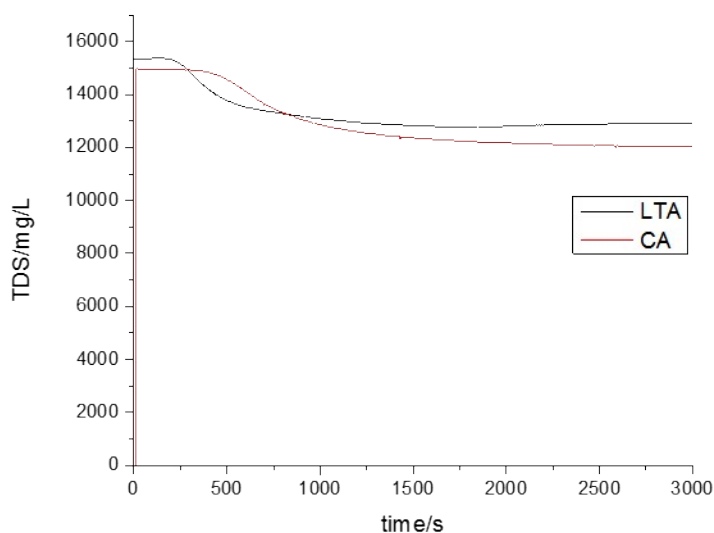


Figure S1. SEM images of gypsum crystal obtained in the presence of LTA/CA before and after washing.



Total dissolved solids (TDS, mg/L) measurements

Figure S2. TDS of different solution as a function of precipitation time.

TDS represents the total amount of the soluble solids, including both inorganic and organic materials in aqueous solution. The TDS was measured through TDS meter (INESA DDSJ-318).

Inductively coupled plasma (ICP) measurements

The concentrations of Ca^{2+} was characterized using an inductively coupled plasma (ICP) emission spectrometer (720ES, Agilent, USA). Limited by the sensitivity of the ICP ($c_{\text{max}} < 100$ ppm), the initial supernatant was diluted 100 times before ICP measurements.

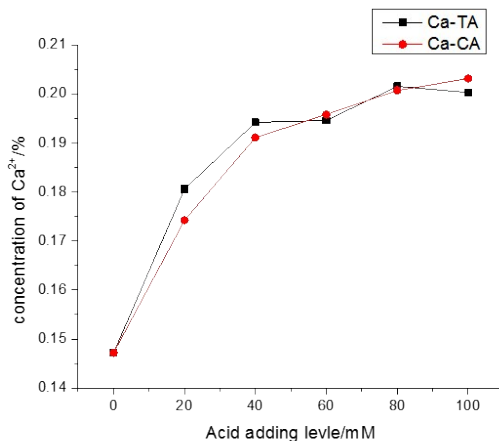


Figure S3. Concentration of Ca^{2+} in supernatant in the presence of different additives with different adding level.

Dissociation constants

Table S4 Acid Dissociation Constants (pK) of the Carboxylic Acids¹

	pK_1	pK_2	pK_3
LTA	3.04	4.37	-
CA	3.13	4.76	6.40

References:

- 1 N. Wada, K. Kanamura and T. Umegaki, *J. Colloid Interface Sci.*, 2001, **233**, 65–72.