

Supplementary Information for

Aspect ratio-controlled preparation of α -CaSO₄·0.5H₂O
from phosphogypsum in potassium tartrate aqueous solution

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Number of pages: 9

Number of figures: 7

Number of tables: 1

Note: The figures, tables and text in this Supplementary Information document are presented in the order in which they are referenced in the main paper.

Supplementary Tables

Table S1 Chemical Composition of the I-PG (wt%)

CaO	SO ₃	H ₂ O	Na ₂ O	K ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	F	others
30.83	42.12	18.65	0.21	0.38	0.55	0.59	3.91	1.64	1.01	0.31

Supplementary Figures

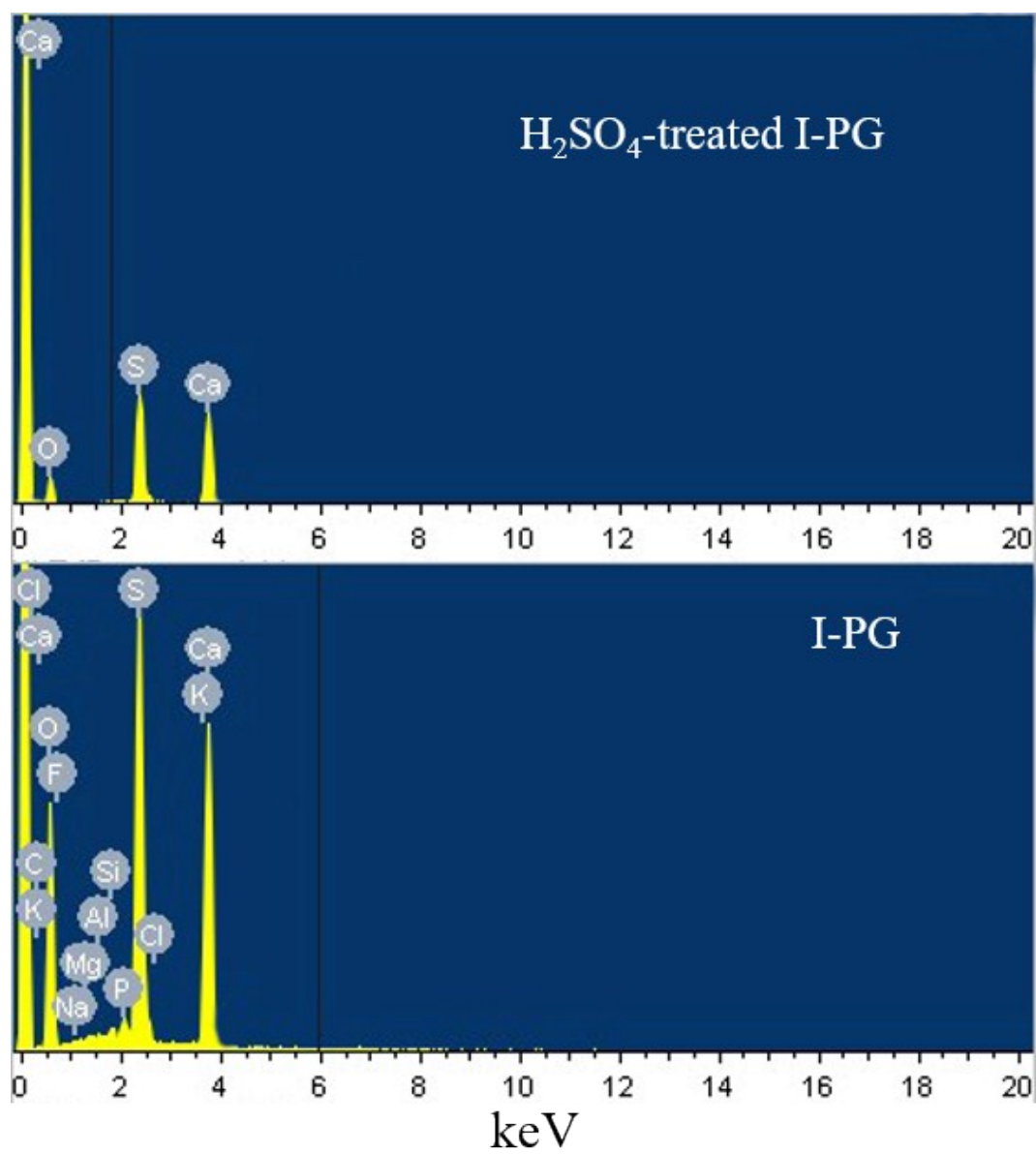


Fig.S1 EDS of I-PG and H₂SO₄-treated I-PG

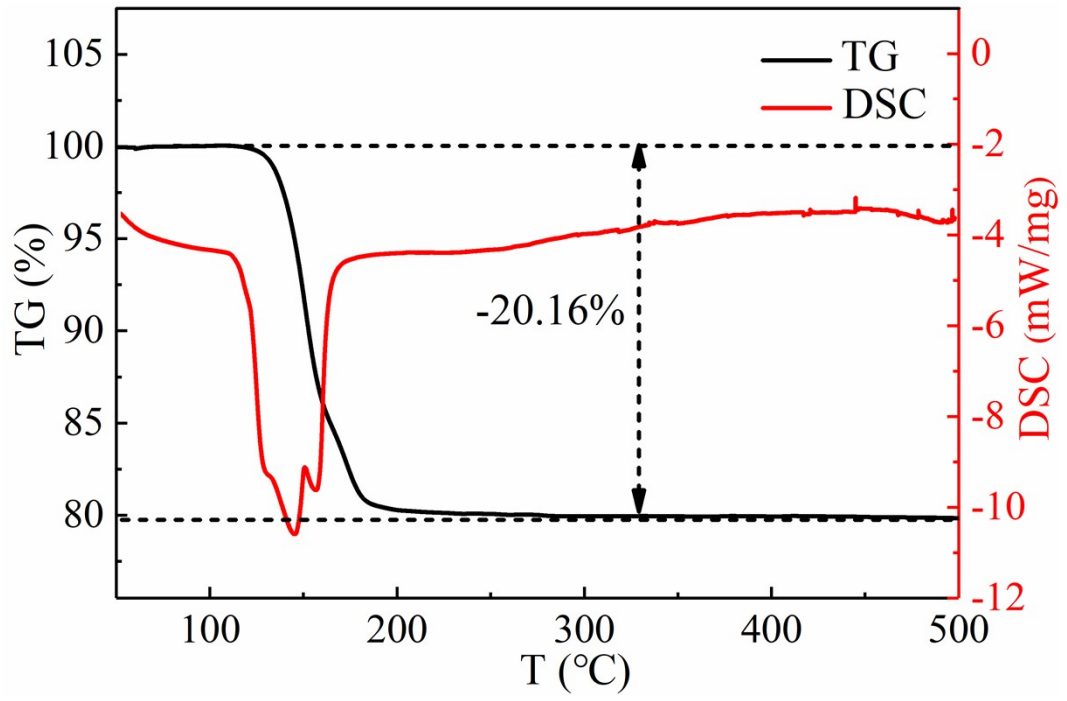


Fig.S2 TG-DSC analysis of H₂SO₄-treated I-PG

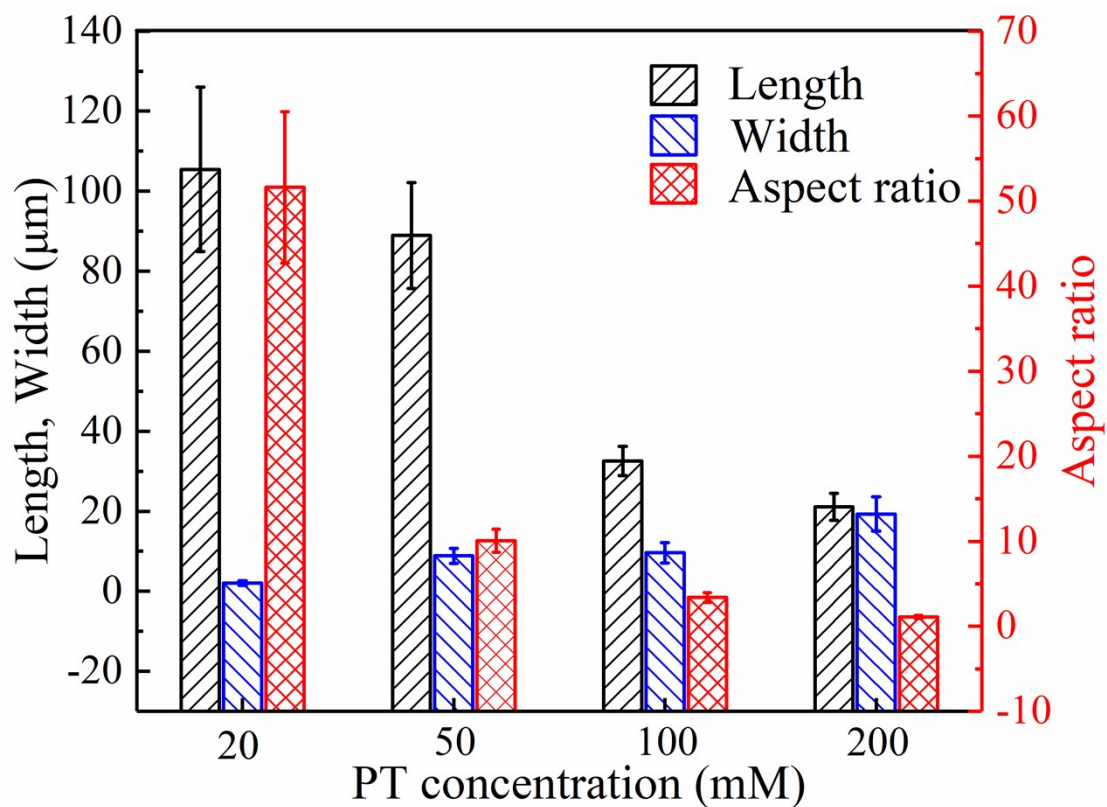


Fig.S3 Average lengths, widths and aspect ratios of the α -CaSO₄·0.5H₂O crystals prepared at different PT concentrations solutions.

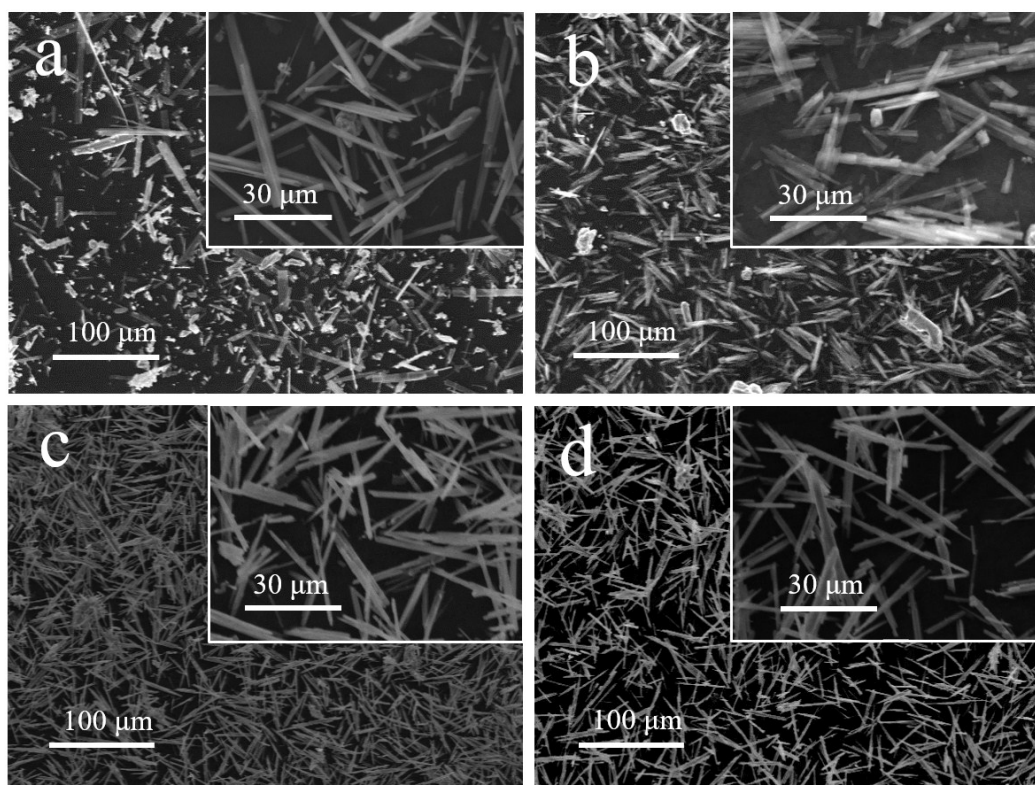


Fig. S4 SEM images of obtained crystals using different concentrations of NaCl: (a) 20 mM, (b) 50 mM, (c) 100 mM and (d) 200 mM.

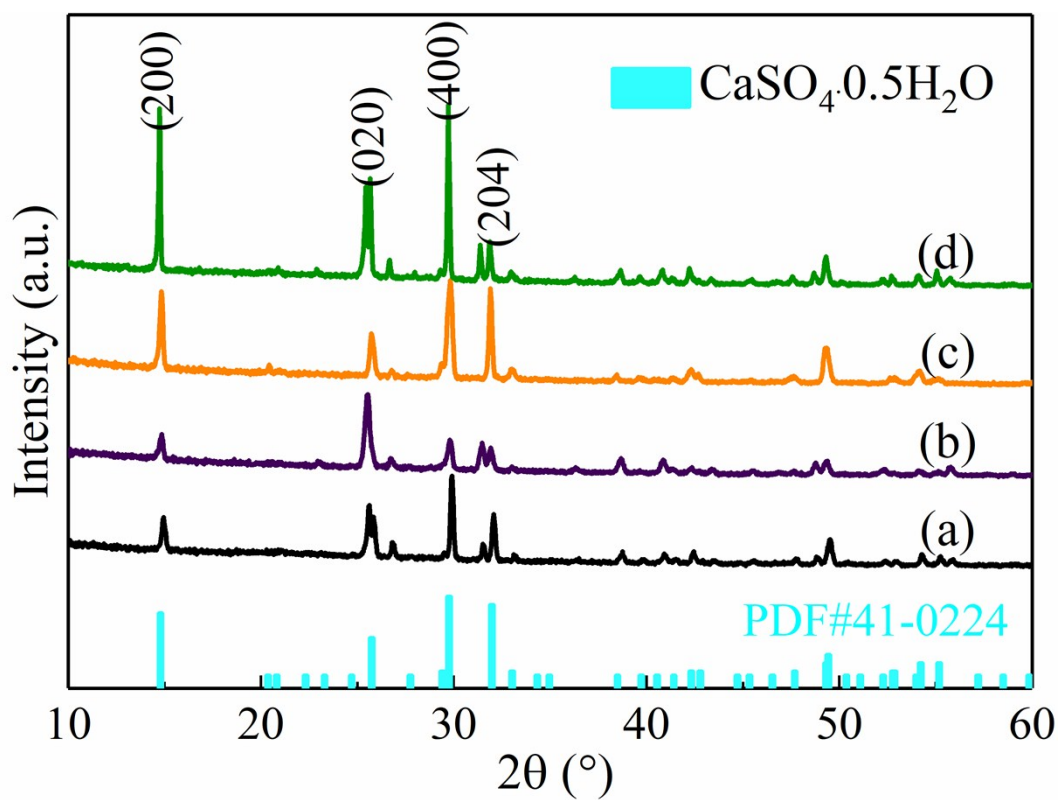


Fig.S5 XRD patterns of the obtained crystals assisted by different concentration NaCl:

(a) 20 mM, (b) 50 mM, (c) 100 mM and (d) 200 mM.

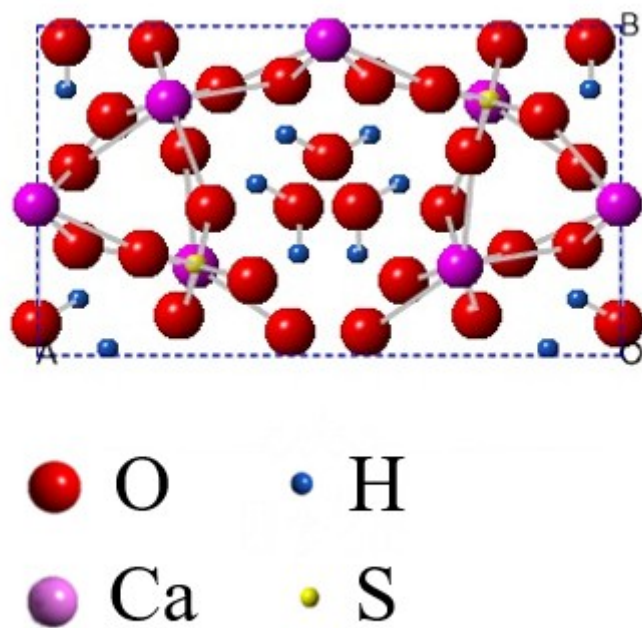


Fig.S6 Chains structure of α -CaSO₄·0.5H₂O crystals view along *c*-axis

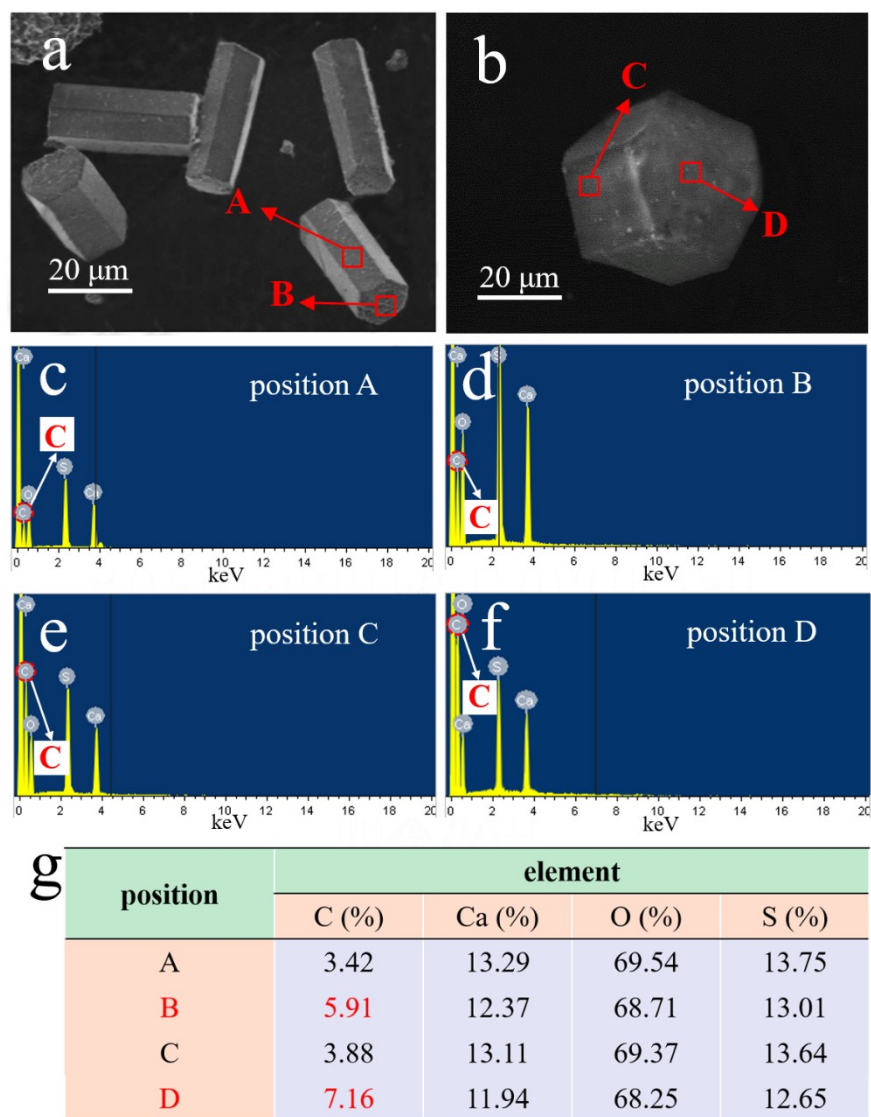


Fig.S7 (a, b) SEM images of the rod-shaped α -CaSO₄·0.5H₂O crystals that prepared in 100 mM and 200 mM PT aqueous solution, respectively, which have been displayed in **Fig.4d** and **e**; (c-f) Corresponding EDS analysis of samples: (c) position A, (d) position B, (e) position C, (f) position D; (g) Elemental contents of the above four positions from EDS analysis.

Fig.S7a and **b** are **Fig. 4d** and **e** which were shown in the main paper respectively.