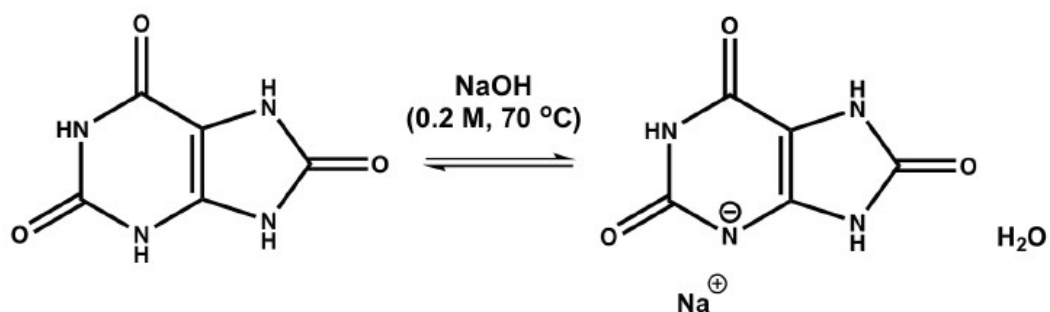


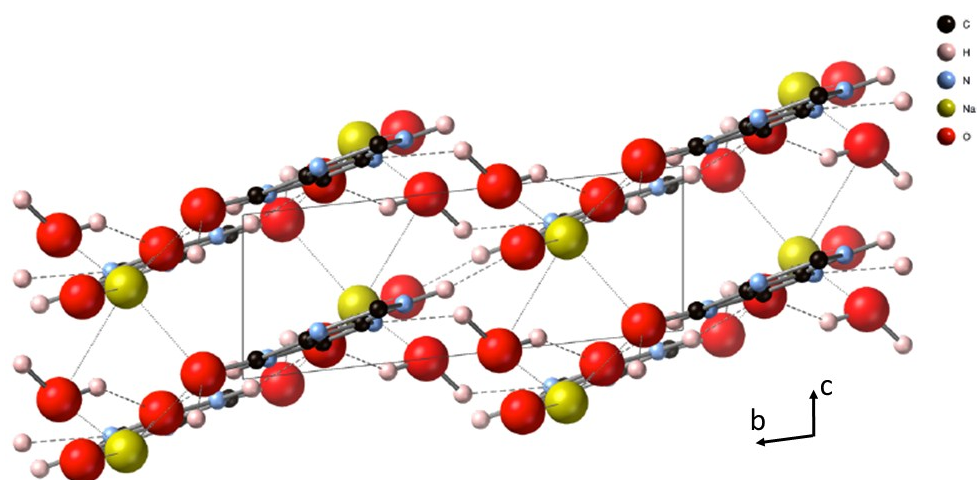
## Supplementary Information

### Structure and cleavage of monosodium urate monohydrate crystals

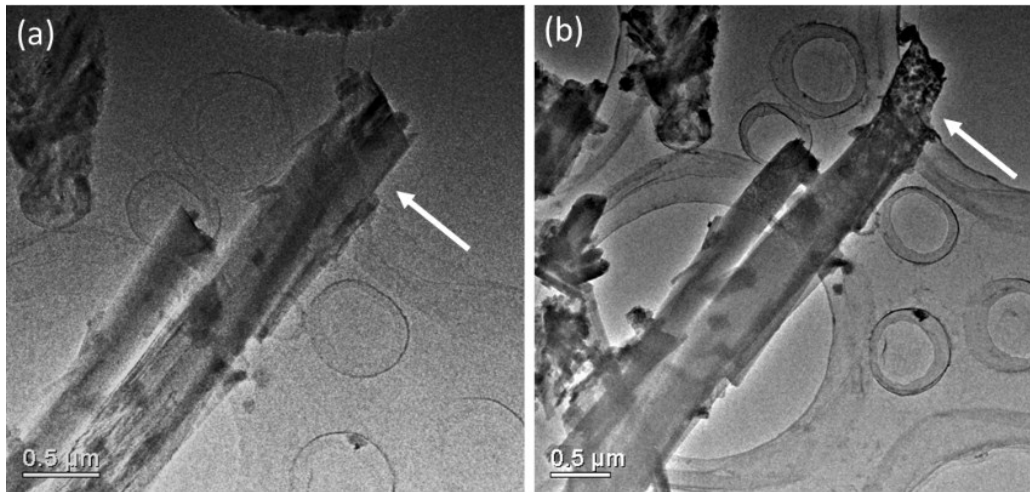
Rachael G. E. Molloy, Weihao Sun, Jialu Chen and Wuzong Zhou



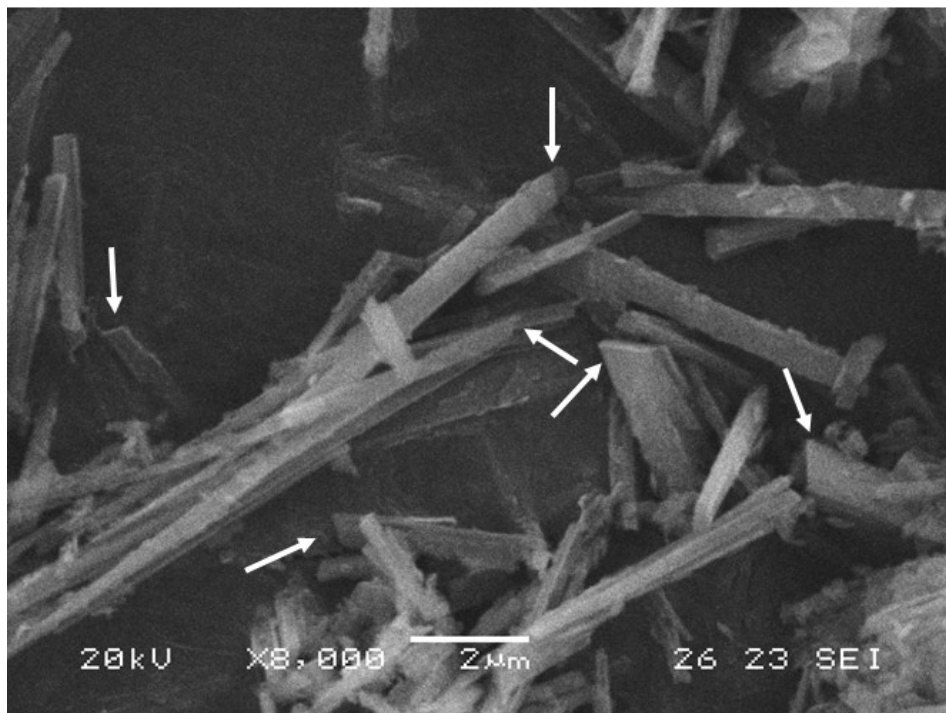
**Fig. S1** The reaction of uric acid with NaOH to produce monosodium urate monohydrate (MSU).



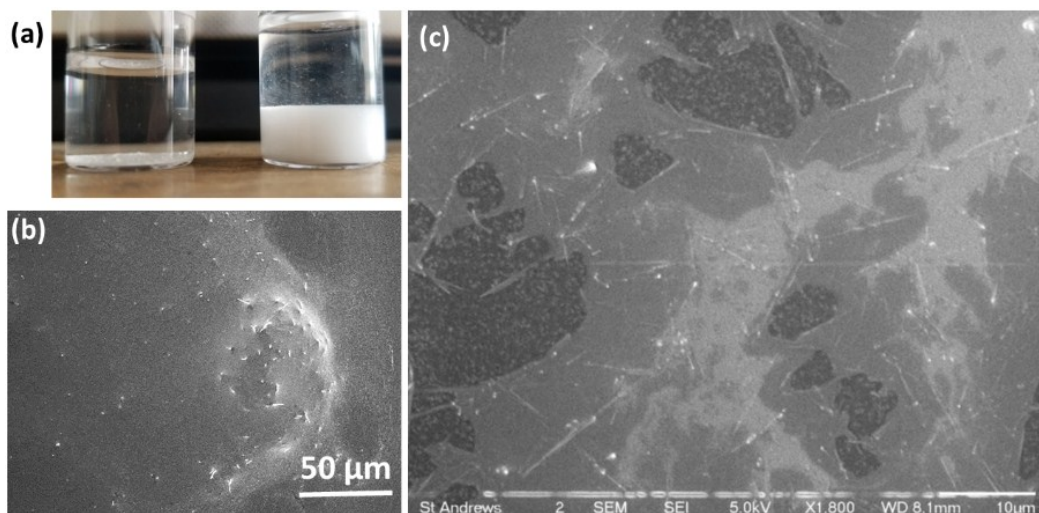
**Fig. S2** Structural model of MSU crystal looking down the [100] zone axis. The unit cell is outlined by the parallelogram.



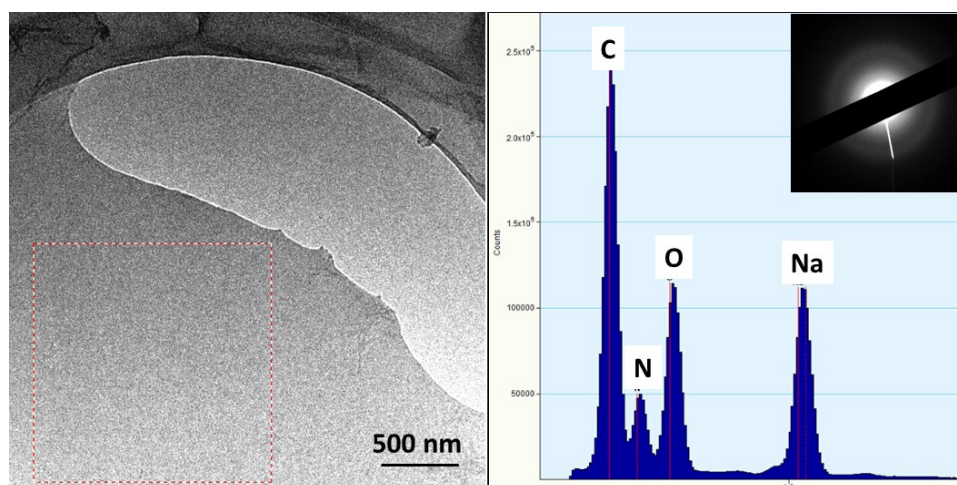
**Fig. S3** TEM images of a MSU crystal (a) before and (b) after electron beam irradiation under HRTEM conditions for a few seconds. The arrows point to the exposed area under HRTEM conditions.



**Fig. S4** SEM image of as-synthesised MSU crystals. The arrows point to the inclined planes at the ends of needle-shaped particles.



**Fig. S5** (a) A comparison of appearance of MSU precipitates in a solution, (left) before and (right) after a sonochemical treatment. (b) SEM image of a thick gel of polymerised MSU molecules with some remaining MSU crystals (bright spots) after sonication for 15 min. (c) SEM image of a thin gel region of the sample after sonication for 45 min. The bright lines are the remaining MSU crystals.



**Fig. S6** TEM image of a thin layer amorphous component in sonicated MSU specimen, and corresponding SAED pattern and EDX spectrum from the selected area marked by the square.

**Table S1** Compositions of buffer solutions with different pH values.

pH	Solution x	Volume x (ml)	Solution y	Volume y (ml)
1.0	0.2 M KCl	50.0	0.2 M HCl	97.0
2.0	0.2 M KCl	50.0	0.2 M HCl	10.6
3.0	0.2 M potassium acid phthalate	50.0	0.2 M HCl	20.3
4.0	0.2 M succinic acid	50.0	0.2 M NaOH	20.0
5.0	0.2 M succinic acid	50.0	0.2 M NaOH	53.4
6.0	0.2 M succinic acid	50.0	0.2 M NaOH	87.0
7.0	0.2 M tris acid maleate *	50.0	0.2 M NaOH	48.0
7.4	0.2 M tris acid maleate	50.0	0.2 M NaOH	54.0
8.0	0.2 M tris acid maleate	50.0	0.2 M NaOH	69.0
9.0	tris(hydroxymethyl)aminomethane	50.0	0.2 M HCl	5.0
10.0	0.2 M Ammediol	50.0	0.2 M HCl	2.0

\*0.2 M solution of tris acid maleate (24.2 g of tris(hydroxymethyl)aminomethane + 23.2 g of maleic acid in 1000 ml).