**Immobilisation of chromium in magnesium carbonate minerals**

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Supplementary Information.

**Fig.** S1. XANES at Cr k-edge collected over 8 hours during continuous co-precipitation experiment.

**A graph of energy

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**Fig.** S2b. Expanded Fig 2b showing detailed view of the pre-edge.

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**2. Precipitation of stichtite**

MgCl3.6H2O (7.624 g) and CrCl3.6H2O (3.330 g) were dissolved in 50 mL of deionized water, making up a dark blue liquid of pH 1.89, named solution 1. NaOH (4.004 g) and Na2CO3 (10.6 g) were dissolved in 50 mL of deionized water, making up a colourless clear liquid of pH 13-14, named solution 2.

From a burette, 25 mL of solution 2 was slowly added to solution 1 in a beaker. Blue precipitate formed immediately. The solution was vigorously stirred during addition of solution 2 and for 2 hours afterwards, using a magnetic stirrer.

The resulting dark blue solution was vacuum filtered and washed with deionized water. The product was split into 3 subsamples: Dried at 40°C in an oven, room temperature and washed with acetone followed by room temperature drying. The resulting solid was light blue in colour.

Close-up of a microscope view of bacteria

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Fig. S. Secondary electron (SE In-lens) image Cr-bearing material formed during stichtite precipitation experiment.

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**Fig.** S. XRD traces of materials formed during stichtite precipitation experiment. MPLY184 formed at 40°C sample (1 subsample = light blue, dry material; 2 subsample = dark blue, wet material); MPLY185 formed at Room temp sample (dark blue, wet material)