Supporting information for Porosity and fluid pathway development during cadmium sequestration by calcium carbonate replacement

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The supporting information contains eight figures.

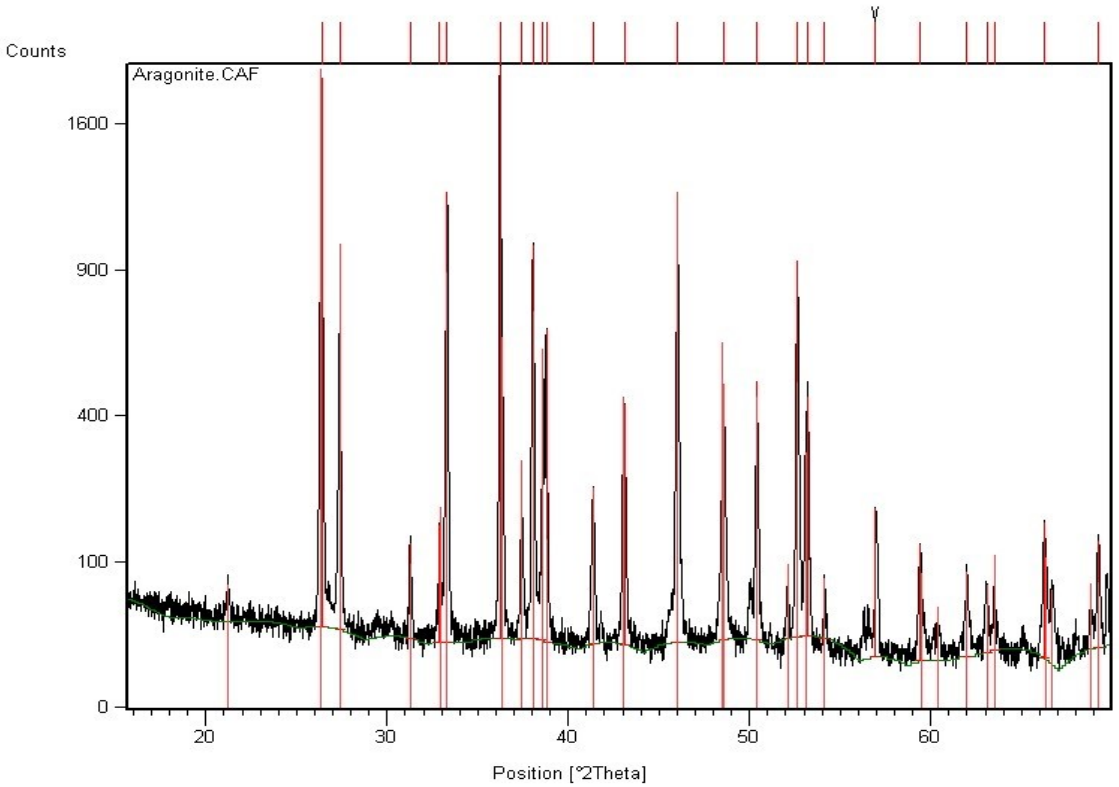

Figure S1: X-ray diffraction spectrum of the aragonite used for the experiments. The vertical red lines indicate the main peaks of aragonite.

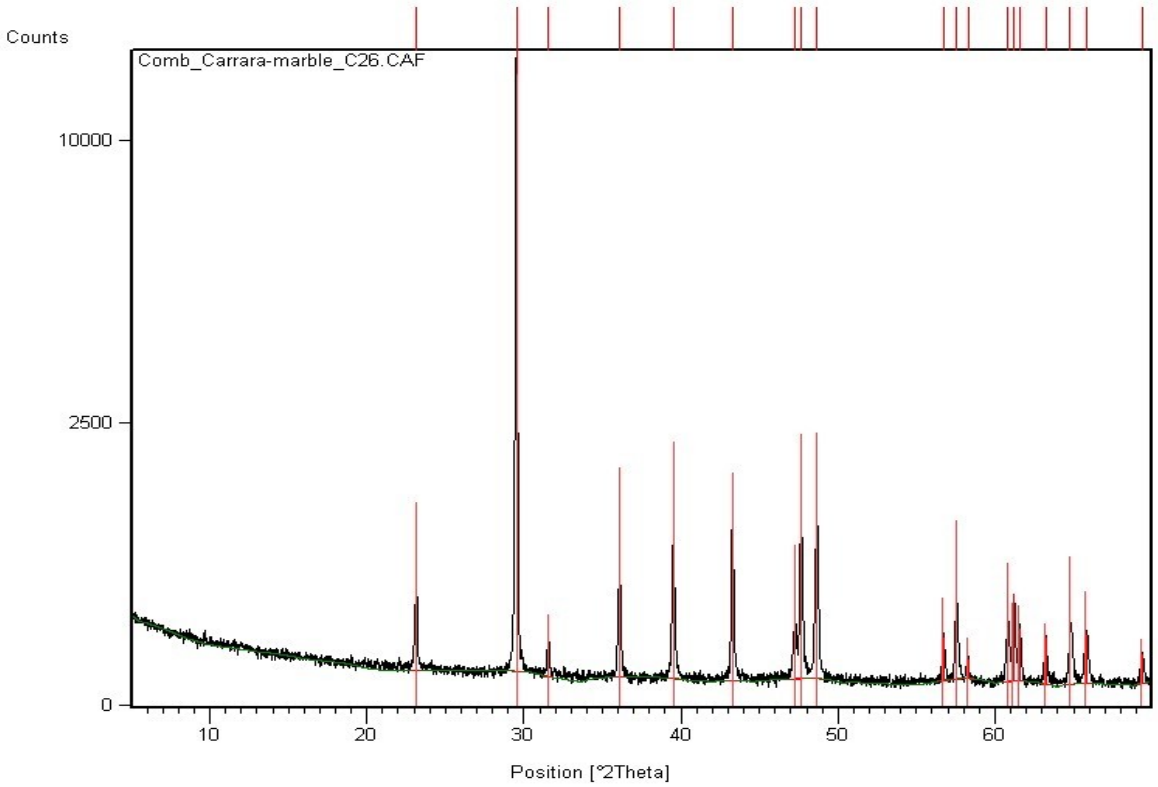

Figure S2: X-ray diffraction spectrum of the Carrara marble used for the experiments. The vertical red lines indicate the main peaks of calcite.

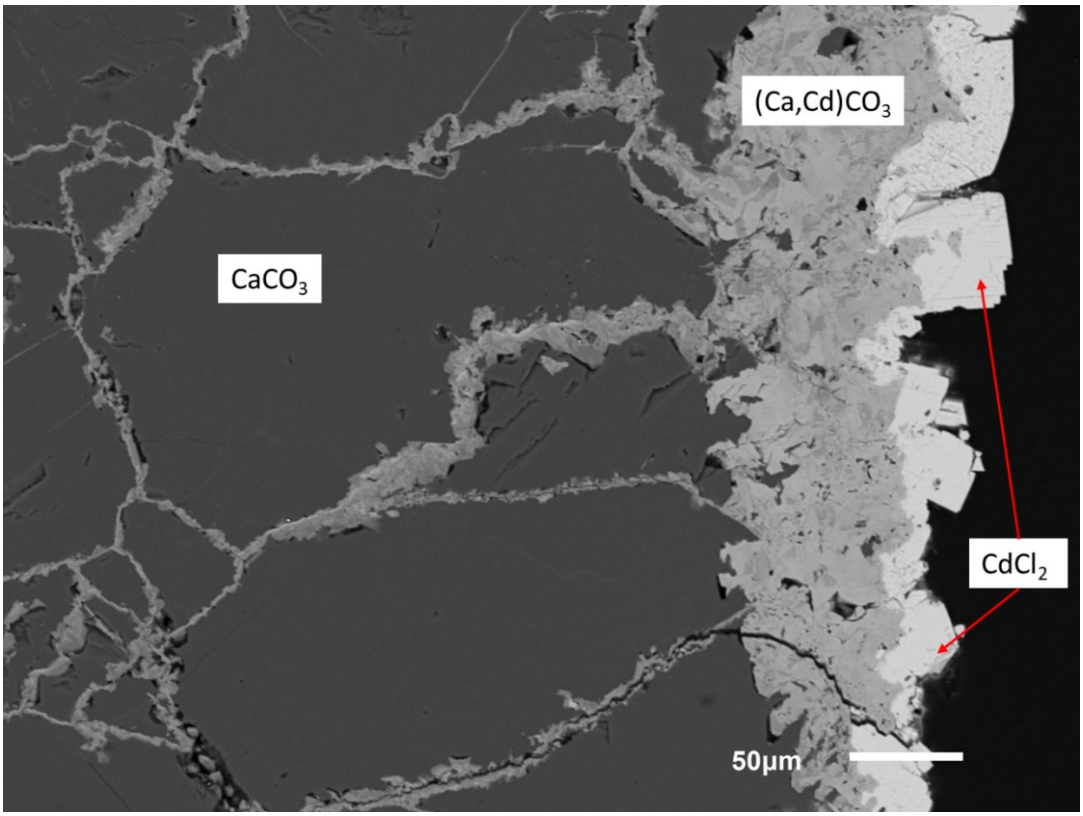

Figure S3: Back-scattered electron image of a Carrara marble sample reacted with similar conditions to Carrara – 05. Crystals of $CdCl_2$ are visible on the sample surface as a result of precipitation during cooling at the end of the experiments.

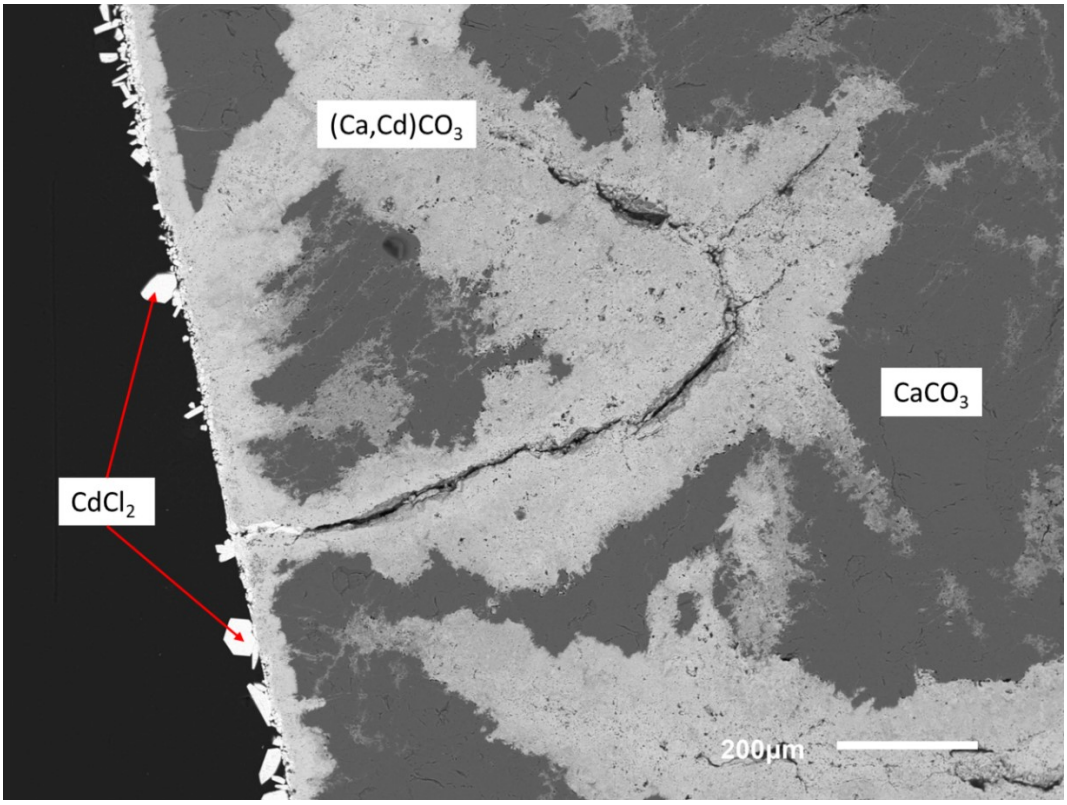

Figure S4: Back-scattered electron image of an aragonite sample reacted with similar to Aragonite – 02. Crystals of $CdCl_2$ are visible on the sample surface as a result of precipitation during cooling at the end of the experiments.

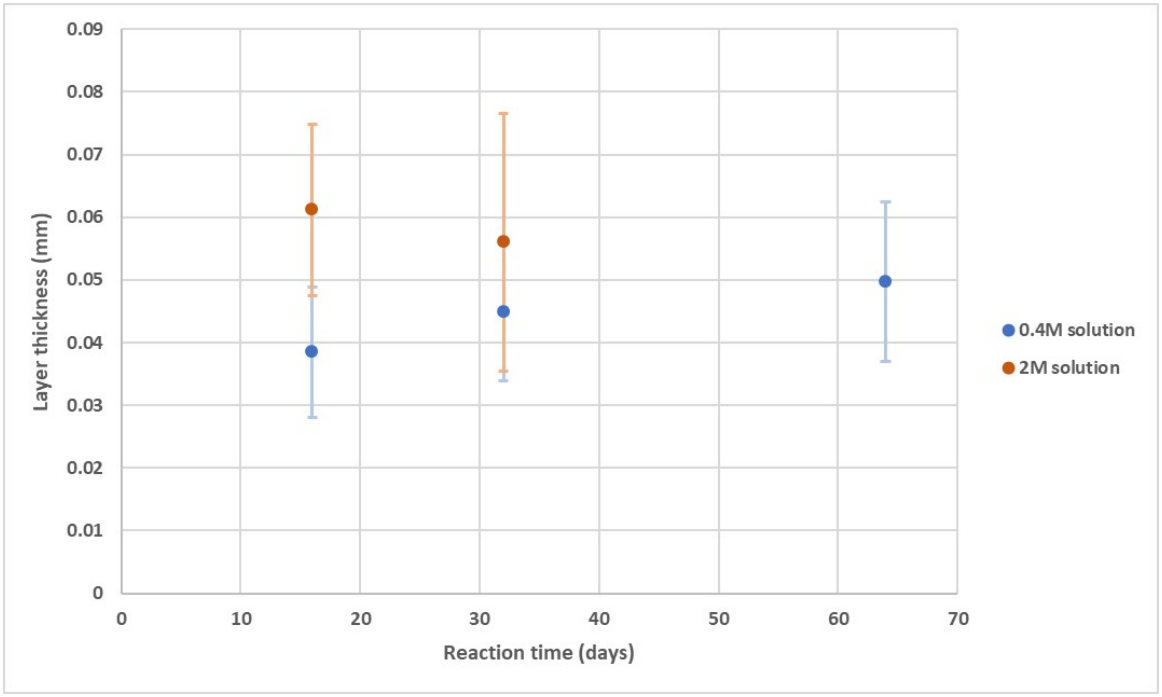

Figure S5: Evolution of the thickness of the surface reaction layer on the aragonite samples with reaction time and solution concentration (Aragonite – 01 to 05). The standard deviation of one hundred measurements on each sample is indicated by the error bars.

Figure S6: Sample Aragonite-04 reacted for 16 days in a 2M $CdCl_2$ solution tomograph slice with measurements of the thickness of the reacted layer surrounding the sample. Note also the invasive dissolution-precipitation reaction due to reaction-induced fracturing in this sample.

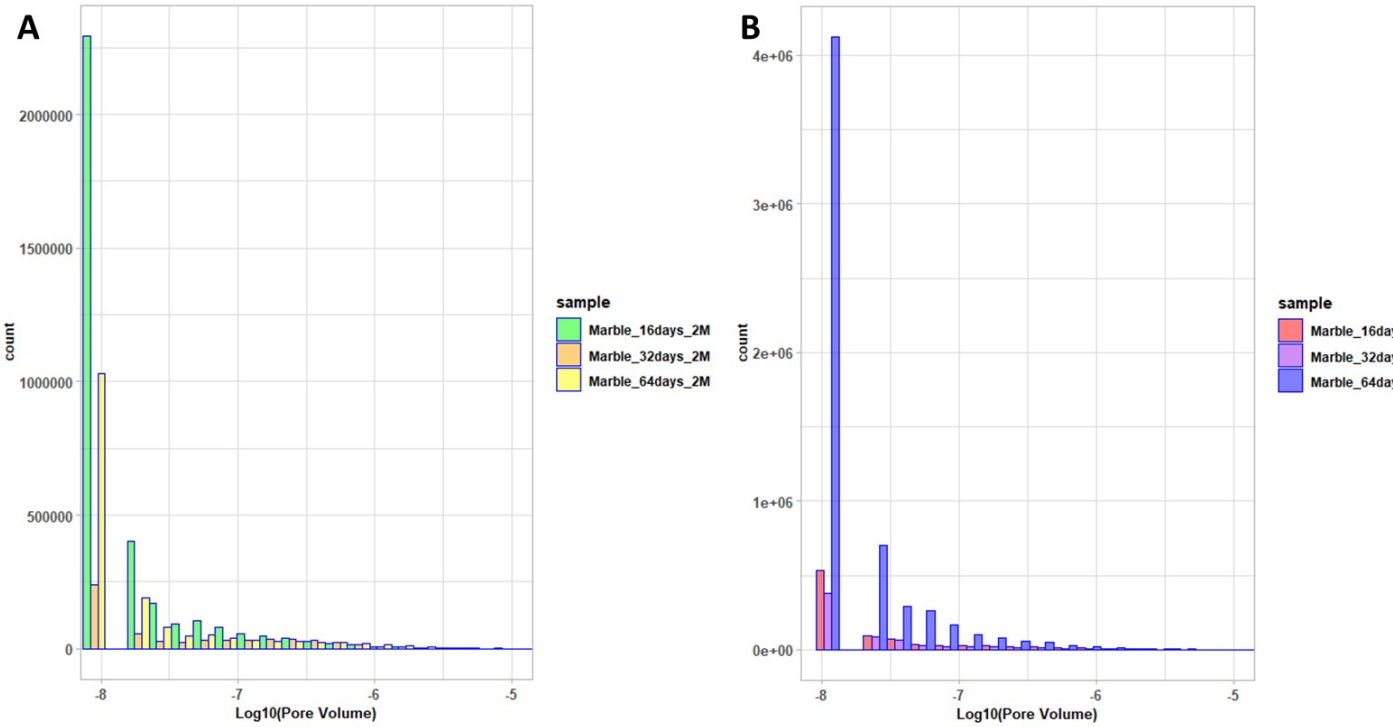

Figure S7: Number of pores plotted against the log10 of their volume (in mm^3) showing the volume repartition for the pores extracted by segmentation of the X-ray microtomography scans for the Carrara marble samples reacted in A) 2M $CdCl_2$ solution and B) 0.4M $CdCl_2$ solution. The pores were analysed using the Axis connectivity function of Avizo 3D with a 26-fold connectivity.

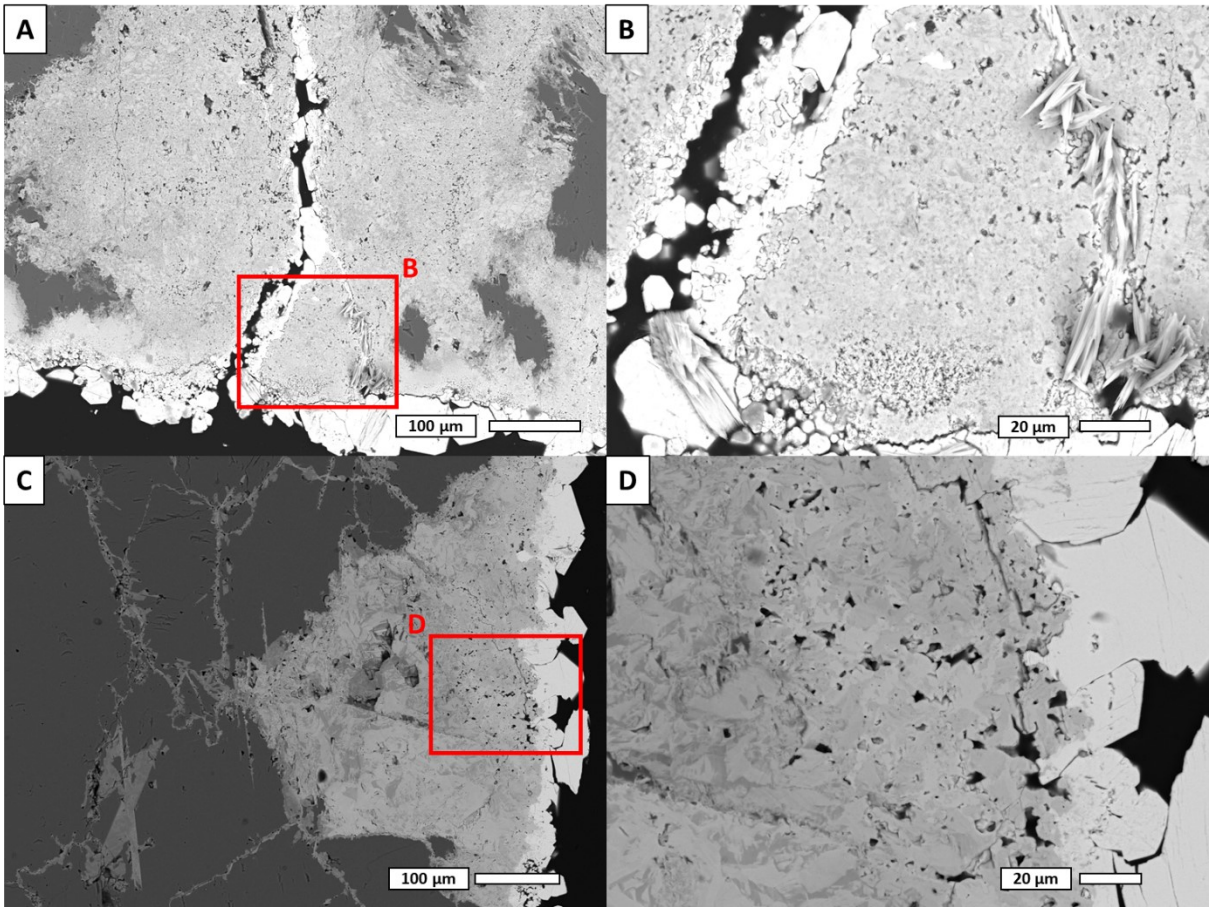

Figure S8: SEM images of : A and B) an aragonite sample reacted for 64 days in a 0.4M CdCl2 solution and C) and D) a Carrara marble sample reacted 64 days in 0.4M CdCl2 solution.