

Supplementary Materials: A durable nano-SiO₂-TiO₂/dodecyltrimethoxysilane superhydrophobic coating for stone protection

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A. XRD characterization of sandstone

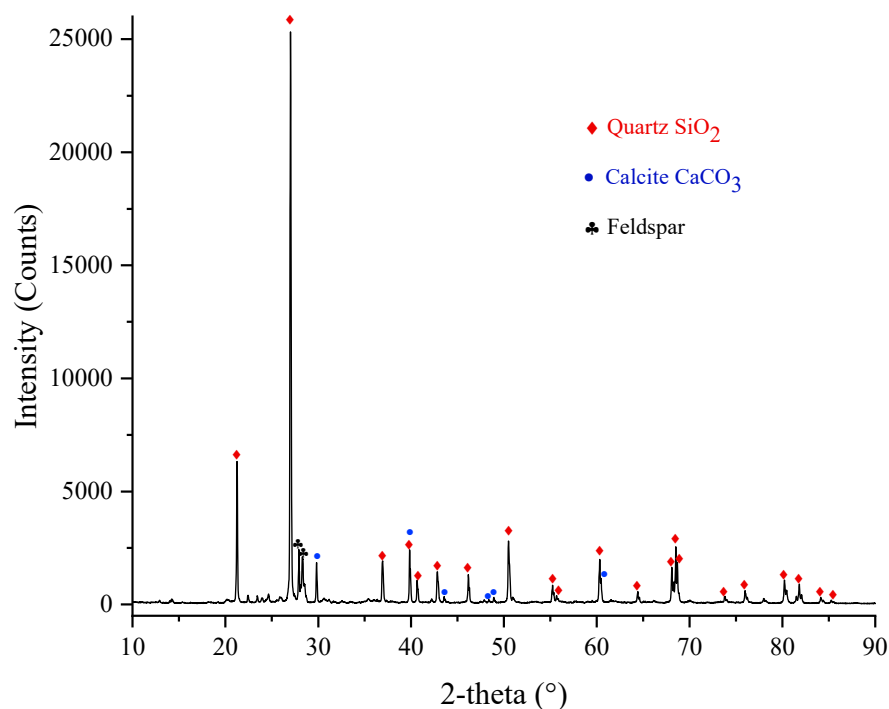


Figure S1. XRD pattern of sandstone used in this study.

The XRD diffractogram was recorded on an X-ray diffractometer (Bruker, D8 Advance, Karlsruhe, Germany). The intensity of radial scans for each sample was recorded using a Cu K α radiation which was generated at an operating voltage of 40 kV and a filament current of 40 mA.

According to the analysis, the main components of sandstone used in the experiment are quartz SiO₂, calcite CaCO₃ and feldspar.

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B. Micromorphology of the samples

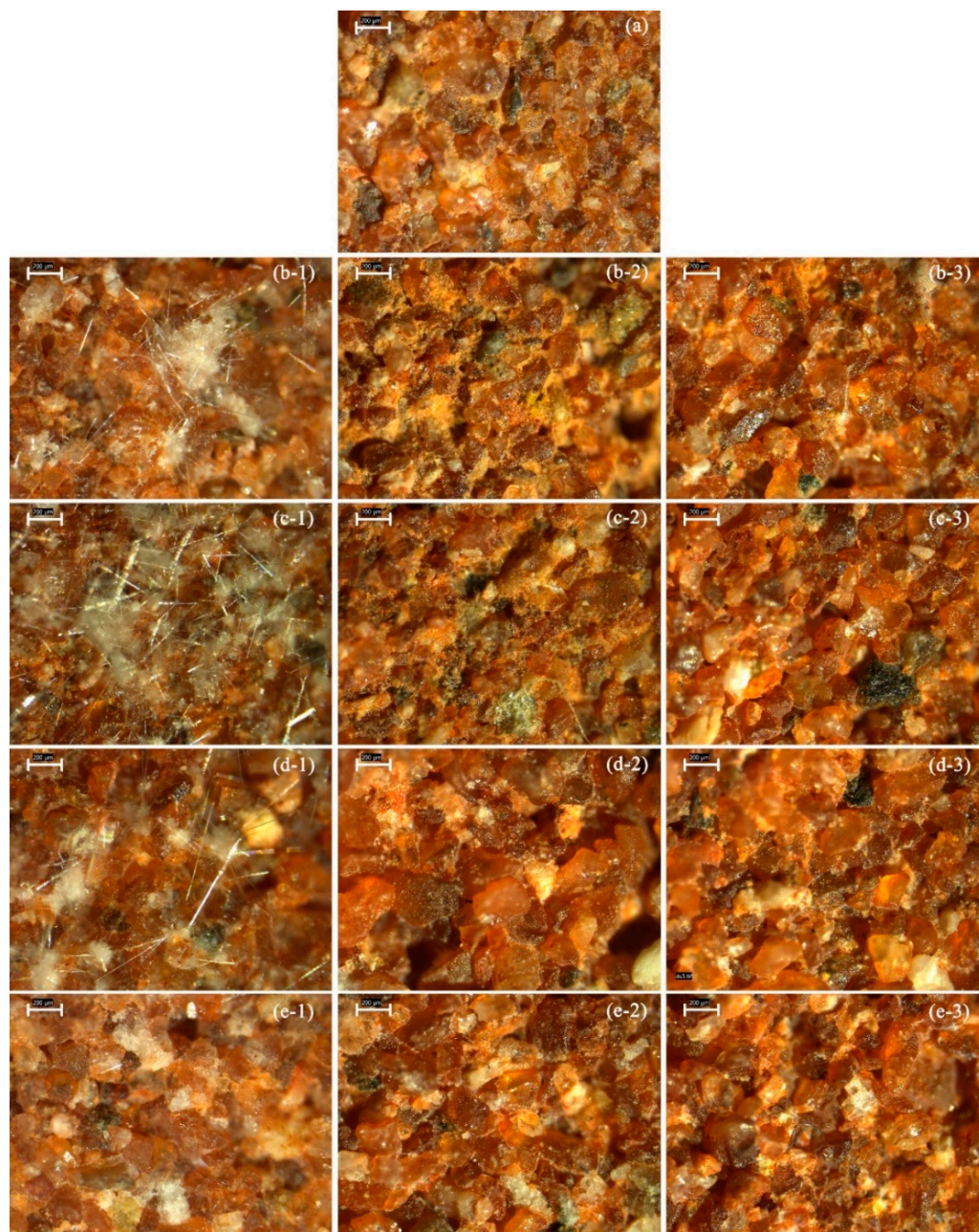


Figure S2. Micromorphology images of the samples tested for chemical stability. (a) S, (b) D, (c) DT, (d) DS, (e) DST. Among them, (1) for immersion in pH=1 solution, (2) for pH=7, and (3) for pH=13.

The micromorphology images were revealed on an optical microscope (Leica, S8APO, Wetzlar, Germany).

According to the images, when the samples were immersed in pH 7 or 13 solution, their micromorphology was no change basically compared to original sandstone. While samples were immersed in pH 1 solution, they were structurally damaged and there were a lot of crystals precipitated on the surfaces.