

ABSTRACT  
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## **A New Method of Measuring Condensation Corrosion**

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Condensation waters can corrode limestone and speleothems, because their chemistry makes them aggressive to soluble and calcium carbonate minerals. They become considerably more corrosive if they contain dissolved carbon dioxide. Humans breathe out saturated water vapour together with 4-5% carbon dioxide. Therefore the potential for condensation corrosion is greater in tourist caves. In our experiment slabs of Carrara marble have been exposed at 5 sites within the Jenolan Caves System NSW Australia for a 1-year period. At each site, 3 vertical and 3 horizontal slabs are placed. At 3-month intervals the slabs are weighed and replaced. At the same time an impressions of the marbel surfaces are taken using 3M Express Vinyl Polysiloxane (light body-7302H). Then the casts are used to measure the surface roughness of the marble slabs by creating 3-dimensional images using the confocal microscope. The MPL function of the confocal microscope is used to create a surface profile and the MPL "function is used to find a surface roughness coefficient. The results and conclusions of the 1-year study at Jenolan Caves will be presented in this paper.