



## **Determination of the origin and texture of marble artifacts using stable isotopes**

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For the characterization of marble and the identification of the origin of marble artifacts, samples from several ancient monuments of Greece were analyzed using several techniques: stable isotopes of carbonates ( $^{13}\text{C}$ ,  $^{18}\text{O}$ ), XRD analysis and optical microscopy, from which information can be obtained on the origin and texture of the marble used for the production of the artifacts.

The full range of grain sizes and isotopic signatures that occur in a lot of different quarries has been measured and presented. In a  $^{13}\text{C}$  versus  $^{18}\text{O}$  diagram, the fields corresponding to all known ancient quarries (from Penteli, Cyclades, especially Naxos (Mela, Apol, Apir, Senax), Keros, Paros (Parlak, Parlyc) and Asia Minor (Prokon)) are reported. The plots representing the analyzed samples are also shown on the same diagram. The final results of the study indicate the origin of the carbonate material of the artefacts from each of the ancient monument. In cases that the samples plot on overlapping areas, a further study is proposed, using the maximum grain size of the material.