



## **Petrology and Mineralogy of the Chert Formations of the Maltese Islands**

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The existence of cherts on the Maltese Islands has been recorded in the past, but until now there has never been any petrological research on these formations. Hence, nothing is known about their internal content and the conditions under which they were created.

The Maltese Islands are composed of sedimentary shallow marine formations, extended from the Oligocene (~30Ma) to the Miocene (~5Ma). The field investigation showed that chert outcrops are only found inside the middle Globigerina Limestone formation (between 20 and 16 Ma), mainly in nodular form. Thin beds horizons are occasionally reported, but they are very limited in size and length. The Maltese cherts are pure sedimentary rocks and not related with magmatic or volcanic events. They are dense, opaque, dull and fine-grained, and have conchoidal fracture and greyish or brownish colours. During the fieldwork, representative samples were collected to examine their mineralogical and fossil content. They mainly consist of microcrystalline quartz, but they have high concentrations of microcrystalline calcite. Additional minerals reported are micro-dolomite and feldspar, which are frequent in many samples. The fossils recorded are radiolarian and sponge spicules, which suggest a biogenic source for the Maltese cherts. In addition, there are many fossils which should be attributed to the host limestone (e.g. echinoderms). These findings suggest that there were sufficient sources of silica to contribute towards the sedimentation of the chert formations. However, the presence of minerals and fossils related with the host rock formation indicates that they were possibly created by replacing the limestone.

This research is part of a greater project (FRAGSUS) investigating the Stone Temples on Malta (between 4th and 3rd millennia BC) and identifies the circumstances under which these unique monuments were built.