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SOME OBSERVATIONS ON THE COMPOSITION OF 5TH CENTURY (A.D.) PLASTERS AT SIGIRIYA FORTRESS

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The plasters were examined using polarization and scanning electron microscopy (SEM), X-ray diffractometry, and simultaneous thermal analysis (STA).

The plasters generally off white in colour and having tinges of brownish ferruginous material, on microscopic observation revealed the existence of

multiple layers measuring a few mm in thickness. The topmost layers were thinner than the lowermost layers. The topmost layers were found to consist of fine grained quartz in a calcareous matrix whereas the lower layers had coarser quartz grains. In both layers, the mineralogy was the same, the other minerals present being calcite, dolomite and accessory feldspar, magnetite, mica and ilmenite.

In the calcareous matrices, both calcite and dolomite were noted. The matrices also showed cracks which had subsequently been filled with secondary calcite. Reddish brown carbonaceous material was found disseminated in the calcareous matrices. Some of this carbonaceous material resembled paddy husks and hay.

The unburnt carbonaceous material suggests a non thermal process for the manufacture of the plasters, whose plasticity could have been obtained by the addition of a plastic clay which may have contained the minor minerals such as feldspar, mica, ilmenite etc. Multiple layering characterized by different types of paintings suggest the development of the plaster over different archaeological periods. The frequent occurrences of dolomitic marble in the environs of Sigiriya seem to have tempted the ancient technicians to use them as the base material for plasters.