

PLACER GOLD OF SRI LANKA AND THE SIGNIFICANCE OF ITS OCCURRENCE

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Placer gold occurs in varying amounts in many parts of Sri Lanka, some of the important localities being Acaravitigama (near Anuradhapura), Walwe Ganga basin, Kiriibbanwewa and Ranna. A considerably large amounts of gold have been recovered from the Balangoda-Kaltota area of the Walawe Ganga basin and from the Kiriibbanwewa area and also from Acaravitigama in the ancient times.

The placer gold grains show different morphological and superficial features, which are based both on original shape and their history in the sediments. Physical and chemical changes have taken place during and after alluvial transportation and deposition. The length of gold grains from Walawe ganga recovered in this study varies from <0.5mm to about 7mm whereas the average size of the grains from other tributaries is 0.5mm. The size of some particles that have been recovered by miners at Balangoda and Kiriibbanwewa have been more than a centimetre in length while the large particles found at Acaravitigama have been several centimetres in length according to the ancient literature. They also included grains of dendritic shape.

The chemical composition of gold grains commonly show some relationship to the shape of the grains. The internal structure determined by X-ray diffractogram and external features studied under the microscope indicate that most of the studied grains are of non-accretory in character. The grains that show only a brief transportation history indicate that they have been released directly from a near by gold bearing zone. The chemical composition determined by X-ray Fluorescence Spectrometry and Electron Probe Micro Analyser show that the gold grains can be divided into two main groups; gold grains with very low quantities or no silver (Au 95 - 99%) and gold grains with high silver contents (Ag up to 40%). Little amounts of copper have also been detected. The grains with high silver contents have not been significantly affected during the transportation and deposition and are the natural gold silver alloy known as 'electrum'.

In some particles the original high silver content had decreased from the surface due to a leaching process that has taken place in the sediment over a long period of time. This has been revealed by the study of composition of the surface of the grains and the core of the grains. Accretion could also have contributed to develop grains as gold ions could be released by decomposing pyrite. Such grains occasionally have dark brownish iron oxide coatings.