D-45 Chemistry and morphology of placer gold of Walawe basin

G N Wijeratne[1], S W Nawaratne[1,2]
([1]*Institute of Fundemental Studies, Kandy,* [2]*Dept. of Geology, Univ. of Peradeniya*)

Alluvial gold accumulation can be observed in the lower part of the gem gravel layer which rests upon the bed rock of Walawe Ganga, a river draining a Precambrian Highland Complex rock terrain close to its contact with the Vijayan Complex. The results of sedimentary analysis indicate the varying concentrations of gold which occur as dust, flakes and nuggets along the river bed and their concentration reach up to about 9 g/t sediment. The gold grains show different morphological features as well as different shapes. However 2 main shapes of gold grains were recovered in the study and those shapes appear to have an inter-relationship with their composition, depending on the environmental factors. The grains with a more rounded shape consist of 100% gold and those with angular outlines show lower gold values upto about 60% of gold. Those nuggets which bear about 60% gold show the characteristic of *Electrum*, filling the balance of 30 to 40% by silver and lesser amount of copper and manganese. The dark brownish iron coat on the surface of some of the gold grains indicates that one of the well associated minerals of gold in the source rock could by Pyrite.

On the other hand, the outer contours of those high silver bearing gold nuggets are very sharp ad hence automatically become a measure of both, the distance being transported from their source and the nature of gold that exists in the source area. Beside all these, X-ray diffraction of some of the very common grains confirm the crystalline nature of gold found in the Walawe basin.