MINERALOGICAL AND GEOCHEMICAL CHARACTERIZATION OF GEM-BEARING ALLUVIAL LAYERS IN THE RATNAPURA GEM FIELD, SRI LANKA

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By

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Abstract

A common difficulties encountered in gem industry were poor technology when doing gem mining and poor knowledge about geology, geochemistry and mineralogy. So as a solution for these problems, a few gem bearing areas were studied in Ratnapura district according to the geochemical and mineralogical parameters. A few gem pits were studied including Ganegama and Palmadulla areas. Two gem pits of Ganegama and one gem pit of Palmadulla were studied.

Sample were collected from each gem pits according to their layers. Then the samples were studied after sampling with the aid of cone and quarter method. Part of the sample was carried-out for sieve analysis. Another part was carried-out for mineralogical analysis by using Frantz separator, heavy media separation from Bromoform and microscope. And rest of sample was carried-out for XRF analysis.

Through the XRF analysis, depositional environment of each gem pits were discussed and the samples were analyzed geochemically. Transportation of each gem pits were analyzed through the mobile element/immobile element ratios. Gem bearing layer of Ganegama was subjected from nearest source rock. But Pelmadulla and Ganegama New were subjected from at a distance of source rock. Transportation can identify through the microscopic analysis. (Crystal shape- perfect/euhedral/rounded) Enrichment of Zr and Y is mainly due to hydro dynamical heavy mineral accumulation in the area.

Gem bearing layer can identify through the particle analyzing. When coarse sand highly presented in a layer it reveals that was the gem bearing layer.