

**SEDIMENTOLOGICAL AND MINERALOGICAL
INVESTIGATIONS OF HEAVY MINERAL SAND
DEPOSITS IN MAHAWELI RIVER
ALLUVIAL FAN**

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By

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Abstract

Some places of Sri Lankan coastal stretches have high percentage of heavy mineral accumulation. There was no evidence sedimentological or mineralogical analysis many of them including Koddigar bay alluvial sand deposit. Distribution of heavy mineral sand was observed at first visit of research area. This research was done to investigate relationship between particle size distribution and heavy mineral accumulation, sources of deposit, yield of heavy mineral in deposit and economic feasibility of the deposit.

Thirty Samples were collected at thirty locations of Mahaweli river alluvial fan. Selected samples were sieved by different sizes of sieve for sieve analysis. Sieved samples were collected separately as + 0.063 mm to - 1 mm, + 1 mm to - 2 mm and + 2 mm fractions for mineralogical analysis. Composite sample was sieved using 2 mm, 1 mm, 0.5 mm, 0.25 mm, 0.15 mm and 0.063 mm sieve sizes. + 0.5 mm to - 1 mm, + 0.25 mm to - 0.5 mm, + 0.15 mm to - 0.25 mm, and + 0.063 mm to - 0.15 mm fractions were processed to investigate mineralogical details of research area. Permanent magnet was used to separate magnetite from others before the magnetic separation. Magnetic separation was done for MW samples using lift up magnetic separator. After the magnetic separation all magnetic fractions and non-magnetic fraction were collected separately. Heavy medium separation was done for Non-magnetic fractions. As final laboratory process, Grain counting was done for all sample fractions by optical microscope. Shape of particles was observed.

This research was identified type of minerals such as ilmenite, rutile, zircon, garnet, leucosene (amorphous), quartz as major minerals and magnetite, silimelite, monazite, spinal, feldspar, mica and hornblend as minor minerals of Koddigar bay alluvial deposit. Color of each size fraction; lower size fraction consist of very dark color minerals than other fractions. There were no any heavy minerals over + 1 mm fractions. Zircon grains were commonly rounded. Rutile grains generally were secured their crystal structure. Ilmenite particles were not regular shape and couldn't see sharp edges. Garnet particles were shaped with sharp edges. Rutile, zircon and monazite were found as nonmagnetic heavy minerals.