

**D - 42 EFFECT OF WEATHERING AND TRANSPORTATION ON THE FORMATION OF
GEMSTONES IN THE RATNAPURA DISTRICT, SRI LANKA**

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Sedimentological studies of gem pits indicate the existence of different types of gem sediments such as residual, cluvial and alluvial deposits. In this work structure, lithological and mineralogical studies were carried out in two important gemming areas of the Ratnapura district.

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The study areas are underlain by three main rock types : garnetiferous gneisses, granulites and charnockites. The gneisses show a better foliated structure than the granulites whereas charnockites display a massive structure at outcrops. Two prominent joint systems are commonly observed in the areas and jointing is more pronounced in the charnockites. Garnetiferous gneisses are richer in plagioclase with subsidiary amounts of quartz. Granulites with the characteristic elongate quartz grains are rich in this same mineral with appreciable contents of plagioclase and perthite. Charnockites ranging from acidic to basic types are generally rich in quartz with lesser amounts of orthoclase. The area are characterized by parallel ridge and valley topography resulting from differential weathering—ridges (about 700 m) being formed by competent charnockites and valleys (about 300 m) by weaker gneisses and granulites.

An examination of the gem pits indicates that most of the gem sediments overlie garnetiferous gneiss formations. However mineralogical and textural observations of gem sediments and crushed rock samples show that the occurrence of the commonly mined gem mineral corundum is more pronounced in (a) gem sediments than in garnetiferous gneiss, (b) charnockites and granulites than in garnetiferous gneisses. This study confirms the alluvial and allochthonous nature of most of the gem sediments of the areas and reveals the extent of the weathering and transportation phenomena responsible for the deposition of gemstones.