COMPARATIVE MINERALOGY OF SRI LANKA AND ANTARCTICA

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From the view point of Gondwanaland reconstruction based on the plate tectonics hypothesis, it is assumed that Sri Lanka and East Antarctica including Lutzow-Holm Bay and Prince Olav Coast could be attached in Precambrian age.

Mineralogy of resources minerals from Sri Lanka and East Antarctica are studied. In Sri Lanka as well as Antaractica marble and skarn deposits are intimately associated with phlogopite, forsterite, apatite, spine etc. The equilibrium temperatures by the calcite-dolomite exsolution are around 500°-600° C for both marbles. Crystallinity of disseminated graphite are highly ordered. The serpentine deposits at Rupaha and Udawalawe (Sri Lanka) are composed of phologopite, calcite and partly or highly serpentinized olivine and pyroxene. Among the pegmatite deposits studied in both areas, well developed microcline, perthitic and/or antiperthitic textures were osbserved, where some of them occurred as moonstone and amazonite. Purplish blue coloured zincian spinel with 18 wt % ZnO, which is very similar to ceylonite from Sri Lanka gem gravel, are also found from east coast of Lutzow-Holm Bay. High Pyrope component in garnets is correspond to granulite facies metamorphism. Uvite (Ca-tourmaline), which is rare in nature, has been observed from Sri Lanka gem gravel and East Antarctica. Compositional similarities were observed for Sri Lanka and Antarctic sapphirine, while Sri Lanka sapphirine is associated with relatively lower metamorphic grade minerals such as amphibole, serpentine etc. but Antarctic one is normally associated with high grade minerals such as sillimanite, orthopyroxene, osumilite etc. Sri Lanka sapphirine is assumed to be orgiginally associated with quartz and such a assemblage indicates the formation condition around $900^{\circ}\pm30^{\circ}$ C and 7 ± 1 Kbar (Grew, 1980). The presence of relatively lower grade minerals with Sri Lanka sapphirine may be due to retrograde metamprphism or remetamorphism at a later stage.

The geology and metamorphic conditions estimated by present authors and earlier workers for Sri Lanka match well with those of Lutzow-Holm Bay and Prince Olav Coast, especially Rayner complex in East Antarctica. Resemblance of mineralogical and geological features between Sri Lanka and East Antarctica seems to support the attachment of both.