

**GROSSULAR-GARNET BEARING CALC-SILICATE ROCKS FROM
KAMBURUPITIYA, SOUTHERN HIGHLAND COMPLEX, SRI LANKA:
IMPLICATIONS FOR PETROLOGICAL SIGNATURES**

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Grossular, a Ca-garnet, is a key mineral found in calc-silicate rock in many granulite terranes, which provides important clues on P-T-fluid evolution. In Sri Lanka, grossular is mainly restricted to the southeastern, central Highland Complex (HC) and rarely found in southern and southwestern areas of HC. Here, we report the grossular bearing calc-silicate occurrence at Kamburupitiya, southern HC and its petrological signatures. Rock thin sections were prepared, and Electron Probe Microanalysis (EPMA) and documentation in Back Scattered Electron (BSE) image analysis were done during this study. Grossular occurs as either brown to reddish-brown gem quality massive coarse-grained mono-mineralic patchy or as medium-grained garnet associated with other platy minerals which form the predominant foliation of the rock. Petrologic observations and BSE images show the peak metamorphic assemblage consisting of grossular + clinopyroxene + scapolite + wollastonite ± calcite ± sphene. Grossular are highly fractured and frequently consist of scapolite + wollastonite inclusions without any breakdown reaction textures. Scapolite readily shows breakdown textures forming plagioclase + calcite + quartz symplectites via vapour absent reaction. Other minerals, including wollastonite, do not show any retrograde reaction textures; however, which are commonly recorded in other rocks in southwestern HC—mineral chemistry data of grossular shows $X_{Gr} = 0.87$ and homogeneous in composition from core to rim. The presence of a substantial amount of Fe with Cr and Mn in grossular is probably given its characteristic colour, mainly used as a gem quality hessonite. Scapolite, as well as symplectic plagioclase, are Na poor with equivalent anorthite of scapolite ~81 and anorthite content of plagioclase ~96%, which may indicate the absence of external alkali fluid infiltration as mainly recorded in calc-silicate rocks in southwestern HC during retrogression. Available phase equilibria suggest around 800 - 900 °C at 8 kbar at the peak metamorphism. Scapolite + quartz + calcite symplectite developed at a later stage indicates isobaric cooling following peak metamorphism.

Keywords: Grossular, Calc-silicate rock, Southern Highland Complex, Isobaric cooling