

## **FORMATION AND STABILITY OF GARNET DURING VERY LOW-GRADE METAMORPHISM**

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Garnets constitute one of the most important and well studied mineral groups in metamorphic rocks, being particularly abundant products of low-grade, medium-grade and contact metamorphism. The well understood formation of garnet in all of these environments is in obvious contrast to the only very poorly studied occurrence of garnets of the grandite series (Ca-rich), most notably andradite and andradite-grossular solid solutions, in a variety of very low-grade metamorphic rocks, including meta-basaltic rocks, modern low temperature geothermal systems, unconsolidated calcareous sediments of the modern deep sea floor and hydrothermal marine jasper. In this contribution two distinctly different occurrences of grandite garnet and hydrogarnet in virtually unmetamorphosed chemical sediments of the Late Archean - Early Paleoproterozoic Transvaal Supergroup in Griqualand West, South Africa are described. The origin of the garnets at temperatures below 200 degrees Celsius and low pressure is confirmed by fluid inclusion, stable isotope and mineralogical evidence. Based on geological and petrographic observations, criteria for the origin of garnet in very low-grade metamorphic systems are defined.