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Occurrence of Texturally Sector-Zoned Garnets from Sindesar-Khurd Pb-Zn- Ag deposit, Rajasthan, India

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Garnet is one of the most common metamorphic mineral which exhibits zoning. In addition to chemical zoning, garnet also shows textural sector-zoning. Textural sector-zoning (TSZ) in a crystal can be defined by the presence of a series of pyramids, wherein the crystal faces form its base, which eventually gives its sectoral appearance in thin section (Sahama, 1966). TSZ in garnets is characterized by the presence of three optical zones and two major types of inclusions, namely: type-I and type-II. The type-I inclusions are generally equidimensional grains composed of mainly quartz and graphite, whereas the type-II are rod-shaped inclusions of quartz arranged perpendicular to the crystal faces (Anderson, 1984; Burton, 1986).

For the present study, garnets from the Sindesar-Khurd SEDEX deposit, Rajasthan, India, were examined. Sindesar-Khurd garnets preserve TSZ and type-II inclusions, wherein the inclusions are composed of sulfides, in addition to quartz. The TSZ of garnet apparently shows a coherent textural relationship with that of the metamorphosed massive sulfide minerals. Similar, TSZ within garnet have been previously reported from metamorphosed massive sulfide deposits, which include the Sulitjelma copper mining district (Burton, 1986) and the Sanbagawa metamorphic belt (Shirahata and Hirajima, 1995). From the obtained preliminary results, it is suggested that the development of TSZ in the Sindesar-Khurd garnets may be possibly linked to the sulfidation of Ca-, Al-, Fe-, Mg- and Mn-bearing minerals such as biotite and carbonates.

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