Nature of Magmatism at Nakora Areas of the Malani Igneous Suite, Western Rajasthan, India

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The Nakora Ring Complex (NRC) (732 Ma) occurs as a part of Malani Igneous Suite (MIS) in the Western Rajasthan, India. NRC complex consists of three magmatic phases (volcanic, plutonic and dyke). Magmatism in the NRC is predominantly of acidic (volcano-plutonics) in nature with minor amount of basic components. Mineralogically, acidic rocks consist of quartz, alkali feldspar, arfvedsonite and riebeckite as essential minerals. They are showing high concentrations of SiO_2, total alkalies, TiO_2, MgO, Ni, Rb, Sr, Y, Zr, Th, U, La, Ce, Nd, Eu, Yb and low concentrations of Al_2O_3, total iron, Cu and Zn. Their geochemical characteristics display similar of A-type and peralkaline – metaluminous – peraluminous associations. AI content is ≥ 1 for peralkaline and < 1 for peraluminous and metaluminous. Nakora peralkaline granites are plotted between 4 kb to 7 kb pressure and are emplaced at greater depths (16 – 28 km and 480º C – 840º C) as compared to metaluminous granites which indicate the high fluorine content in peralkaline granites. The primitive mantle normalized multi-element profiles suggest that Nakora granites (peralkaline, metaluminous and peraluminous) are characterized by low La, Sr and Eu and relatively less minima of Ba, Nb and Ti which suggests the aspects related to crustal origin for Nakora magma. Field, petrological data and their combination of genetic modeling studies suggest that Nakora granites are the product of partial melting of rocks similar to Banded Gneiss from Kolar Schist Belt of India.