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MINERALOGY, GEOCHEMISTRY AND EVOLUTION OF CARBONATITES OF SAMCHAMPI ALKALINE COMPLEX, ASSAM, INDIA

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Abstract

The Samchampi Carbonatites in Karbianglon district of Central Assam constitute one of the prominent alkaline-carbonatite body, falling within the alkaline ultramafic belt of NE India, stretching from Meghalaya to Assam in a NW-SE direction. Petrographic and chemical data show that the carbonatites are predominantly sovitic with rerrolian calcite. Trace element contents reveal pronounced preference of Sr, Ba, Ce, La, Nd, P and Nb over other elements. EMPA studies show average of 60.19% Nb_2O_5, 62.60% RE_2O_3 and 41.68% P_2O_5 in the mineral species pyrochlore, monazite and apatite in the carbonatites. Oxygen and carbon isotope values suggest a primary igneous origin for these carbonaties. The chemical, mineralogical and isotopic data reveal that the Samchampi carbonatites are magmatic, fractionated and may have originated from a mantle derived carbonated alkali ultramafic magma.

Keywords: Alkaline carbonatite complex, liquid immisibility, Kalyani lineament