Li-Cs-Rb mineralisation in Proterozoic zoned pegmatites of Beku, West Bengal, India

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Occurrence of Li-Cs-Rb bearing pegmatite bodies along an ENE-WSW shear zone within the Proterozoic Chhotonagpur Gneissic Complex (CGC) has been established in Beku, Belamu and Khatanga areas of Purulia district, West Bengal, India. The Beku pegmatite occurs in calc-silicate rock within the CGC, which is an important segment of Indian Peninsular shield.

The internal structure of the pegmatite body shows zonation comprising outer tourmaline-rich pegmatite and inner rare metal - bearing pegmatite with spodumene - pollucite - lepidolite assemblage. The pegmatite is strongly peraluminous with high SiO_2, low Fe_2O_3, CaO, TiO_2, P_2O_5 and variable Al_2O_3, K_2O and Na_2O. The Cs/Rb and Li/Rb ratios are higher towards the centre of the body and minimum along boundaries. Again, the K/Rb ratio increases from pollucite - bearing pegmatite to tourmaline - rich pegmatite, depicting more evolved nature of the former.

Petrography and geochemistry of the Beku pegmatite suggest advanced fractionation from a peraluminous S -type granitic magma. It is synchronous to shear development with a minimum formational P,T at 4 kbars and 500^{0}C.