Proterozoic tectonics from the Northern domain of the Eastern Ghats Belt

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The northern domain of the Eastern Ghats Belt in eastern India preserve multiply deformed khondalites interlayered with the charnockites. EPMA chemical ages of the monazite from the garnet-sillimanite-biotite bearing khondalites yield two peaks at ~1046 Ma and ~920-870 Ma. The two age peaks are correlated with first generation of partial melting and a second generation garnet formation. The charnockites interlayered with the khondalites have also undergone partial melting. The monazite ages yielded from the charnockites yield crystallization ages between ~1041-997 Ma, implying a genetic link between the first stage of melt generation within the khondalites in the sillimanite stability field with the charnockite generation. Monazites from the migmatitic charnockites yield second peak at ~934-884 Ma, also recorded from the khondalites, indicating that the two lithounits underwent a partial melting event during the time frame i.e. during Rodinia supercontinent formation when the belt was part of Rayner Complex. A third monazite population within the charnockites yield ages ranging from ~750-740 Ma which is correlated with Rodinia breakup and formation of the extensional Mahanadi Shear Zone at the southern margin of the northern belt of the EGB.