Proc. NIPR Symp. Antarct. Geosci., 5, 168, 1991

THE "BREAKING" AND "MAKING" OF CHARNOCKITES: EVIDENCE FROM THE EAST GONDWANIAN CRUSTAL FRAGMENTS (ABSTRACT)

Masaru YOSHIDA[1] and M. SANTOSH[1,2]

[1]*Department of Geosciences, Faculty of Science, Osaka City University, 3-138, Sugimoto 3-chome, Sumiyoshi-ku, Osaka 558*
[2]*Current address: Centre for Earth Science Studies, P.B. 7250, Akkulam, Thuruvikkal Post, Trivandrum 695 031, India*

Observed and published examples of the retrogression of regional charnockite masses (breaking) and *in situ* formation of veins and patches of "incipient charnockites" (making) in the East Gondwanian crustal fragments are presented. In southern India and Sri Lanka, charnockite masses of varying ages show hydrous alteration and retrogression into amphibolite facies gneisses. The incipient charnockites, constrained at *ca.* 500 Ma, post-date the breaking events and form along fracture systems or pre-existing s-planes, reflecting relatively low pressure and shallow environments. In some places, the incipient charnockites are associated with pink granite veins, as in Kabbaldurga in S. India and Kurungegala in Sri Lanka. The latest tectonic regime in Sri Lanka, comprising the development of gentle folds, ductile faults and pink granite veining, identified as D_4 structures, is considered to compose a definite group of events which include the incipient charnockite formation.

In the region around Lützow-Holm Bay in East Antarctica, the tectonics associated with pink granite-pegmatite development are ductile faults, fractures and gentle folds, similar to those associated with the incipient charnockite formation in India and Sri Lanka. We consider that there is a close similarity in the tectonic environment of incipient charnockite formation and related phenomena of *ca.* 500 Ma among the three Gondwana segments, namely, South India, Sri Lanka and East Antarctica. The differences in the occurrence of incipient charnockites or their association with pink granite veins may simply be a reflection of the different levels of uplift and denudation. Considered in this light, a genetically coeval event of charnockite making could be traced commonly in all the East Gondwanian crustal segments, which occurred during the waning stage of the last regional high grade metamorphism and uplift.

(*Received February 27, 1991; Revised manuscript received May 2, 1991*)