

Geochemistry of Metapelite from *Dakshin Gangotri*

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ABSTRACT

Geochemical studies of the metapelite collected from *Dakshin Gangotri* similarities to the metapelites of the Napier Complex, Enderby Land Antarctica and khondalites of the Eastern Ghats of India.

INTRODUCTION

A sample of metapelite collected by the First Indian Expedition to the Antarctica was analysed in the Geochemical Laboratory of the National Geophysical Research Institute by X-ray fluorescence and Atomic Absorption Spectroscopy. The preliminary studies on the geochemistry of the sample are proposed to be followed by extensive studies of the samples to be collected by the future Indian expeditions. The studies will provide information on the mode of origin of these rock type.

COMPOSITION

Megascopically the sample is garnetiferous, quartzofelspathic rock of granulite facies metamorphism, similar to the metapelites (khondalites) from the Eastern Ghats granulite terrain of the Indian Shield. The rock contains predominantly quartz, plagioclase feldspar and garnet.

The chemical analyses of the sample indicate (Table I) that this is broadly similar in composition to the metapelites from Napier Complex, Enderby Land Antarctica (Sheraton, 1980) and metapelite (Khondalite) of the Eastern granulite belt of India (Divakara Rao, 1983). The rock is enriched in CaO, Na₂O and depleted in Al₂O₃, K₂O compared to the above metapelites. Similarly Sr, Zr, Y show enrichment and Ni, Cr, Rb, depletion among the trace elements.

REFERENCES

Divakara Rao, V. (1983)

Geochemistry and origin of khondalites from the Eastern Ghat granulite belt, *Geophys. Res. Bull.* (In press).

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TABLE 1

Chemical composition of metapelite for Dakshin Gangotri

Element/Oxide	1	2	3	4
SiO ₂ (%)	62.08	60.81	63.50	57.37
Al ₂ O ₃	14.06	17.19	18.81	17.57
TiO ₂	1.33	1.04	0.82	1.21
CaO	4.80	0.71	0.76	2.29
MgO	1.26	2.43	6.11	5.80
Na ₂ O	3.25	0.99	1.01	2.06
K ₂ O	0.65	3.67	1.74	2.87
MnO	0.21	0.12	0.07	0.30
P ₂ O ₅	0.30	0.10	0.04	0.14
Fe ₂ O ₃	10.98	2.97	1.23	2.05

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TABLE I—*Contd.*

Element/Oxide	1	2	3	4
FeO	—	5.03	4.88	8.02
Cu (ppm)	5	10	16	26
Co	15	—	—	—
Ni	18	56	104	86
Cr	142	140	431	188
Sr	190	100	43	136
Zn	102	114	46	—
Rb	62	163	51	116
Zr	480	231	294	—
Y	105	35	35	22

1. Metapelite from *Dakshin Gangotri*, Antarctica. Analysis by P. K. Govil (XRF) and V. Balram (AAS).
2. Average of 11 Proterozoic granulite facies metapelites from Charles Mountain (Sheraton, 1980).
3. Average of 22 Early Archaean granulite facies metapelites from Napier Complex, Enderby Land. (Sheraton, 1980).
4. Average of 11 Pre-Cambrian metapelites from Eastern Ghats (Divakara Rao, 1983).