

trace levels in the clay concentrated for crystal chemical reasons within the chalcophanite. Subsequent crystallization produced coarser tabular crystals.

These deductions suggest that the nature of clay minerals in sediments may influence or even control the development of later manganese oxide minerals in a way which has been hitherto little imagined.

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Pargasite-rich rock from the Eastern Ghats, India

A UNIQUE occurrence of pargasite-rich rock containing 60% pargasite, 39% fassaite, and 1% spinel occurs 2.4 km north of Aganampudi village (Long. 83° 8' 12" E; Lat. 17° 34' 40" N) in Visakhapatnam District, Andhra Pradesh, within the 'Charnockite region' of the Eastern Ghats of the Precambrian of India (Fermor, 1936). It occurs as a conformable body in Khondalites. The sharp contacts and inward coarsening of grain size suggest an igneous origin.

The chemical analyses of pargasite and fassaite are given in Table I along with number of metal ions. The Mg/(Mg + Fe²⁺) ratio (0.752) and Si (6.17) indicate that the analysed amphibole is a pargasite according to Leake (1978).

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TABLE I. *Chemical analysis of pargasite and fassaite*

	Number of ions on the basis of 24(O,OH,F) 6(O)			
	1	2	1	2
SiO ₁	42.05	46.52	Si	6.170 1.742
Al ₂ O ₃	15.86	10.07	Al	1.830 0.258
Fe ₂ O ₃	2.36	2.22	Σ	8.000 2.000
FeO	8.35	5.26	Al	0.912 0.187
MnO	0.21	0.31	Ti	0.084 0.009
MgO	14.18	11.45	Fe ³⁺	0.264 0.063
CaO	10.98	22.58	Fe ²⁺	1.023 0.164
Na ₂ O	2.52	0.27	Mn	0.026 0.010
K ₂ O	0.83	0.15	Mg	3.098 0.637
Cr ₂ O ₃	0.12	0.06	Cr	0.017 0.002
TiO ₂	0.76	0.32	Σ	5.424
H ₂ O ⁺	1.28	0.28	Ca	1.728 0.905
H ₂ O ⁻	0.12	0.12	Na	0.714 0.020
F	0.08	—	K	0.159 0.007
O ≡ F	0.035	—	Σ	2.601 2.004
			OH	1.251
			F	0.035
			Σ	1.286
Total	99.665	99.61		

The pargasite and fassaite have 2V, 88° and 56-60° and Y:Z 20-24° and 38-42° respectively.

1. Pargasite from amphibole-rich rock, Aganampudi.
2. Fassaite from amphibole-rich rock, Aganampudi.

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