

THE STORY OF BIOENERGY, 1995. By Dr D. Chandra, Dev Sahitya
Kutir Private Limited, Calcutta 700 009, 36p. Rs.24.00

The series of booklets on the sources of energy are very useful. The present one on bioenergy is the eighth in this series. The author has covered all relevant aspects. A forceful case is made to impress upon all the concerned that biomass is a valuable alternative source of energy. Important sources of biomass for use in energy generation have been well covered. The illustrations are very appropriate.

The style of writing and the language make the booklet useful to all nonprofessionals, from high school students to ignorant adults, interested in issues that have engaged the serious attention of the government and professionals. Books such as this would be more useful if an index and glossary of technical and semitechnical terms are included.

The author's expertise on the subject is evident throughout the text. Nevertheless, factual correctness of the book would have improved if he had consulted a biologist on issues relating to plants and animals. Plants do not inhale and exhale like animals; trees do not hold soil.

The standard of production of the cover is good but that of the text falls short of this. A paper back edition would lower the cost very considerably and put the book within the reach of more readers. I recommend the book for all general readers and hope that the subsequent edition will be an improvement over the present.

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NOTES

REE ENRICHMENT IN THE OXIDE FACIES BIF OF CHITRADURGA SCHIST BELT, KARNATAKA

Rare earth elements comprise of lanthanides with associated elements such as yttrium, hafnium, scandium and thorium. They normally occur in ultramafics, carbonatites, late stage pegmatites and beach sands. In India, lanthanum and cerium are recovered from monazite sands of Kerala and Orissa. There are no independent mines for REE in India, whereas BIF hosted REE mines are known from Zimbabwe and U.S.S.R.

The sulphide facies in Iron-formation are known to host gold mineralisation (Sawkar *et al.* 1995). The recently discovered Karjagi occurrence in Dharwar district is likely to emerge as ore of gold.

An altogether new line of work has opened up as a result of the discovery of very high anomalous values of REE ($\Sigma 13.51\%$) in the oxide facies of BIF exposed on the Basavanagudda hillock, which lies to the east of Ambarapura and north of Bellara (57 C/10), Chikkanayakanahalli taluk, Tumkur district, Karnataka. In connection with the large scale mapping on 1:25,000 scale and sampling for gold in Bellara-Ajjanahalli golden triangle, a number of composite chip samples of BIFs and quartz veins were analysed by NAA (GSI, Pune) for rare earth elements. The sample interval was 100 m starting from the synclinal closure at the southern end of Basavanagudda. The eastern limb continues for 8 km up to the anticlinal closure at Ajjanahalli mines. The western limb continues through Gramadgudda up to Obulapura in the north and beyond.

Three samples No. P/M/9, 10, 11 (Table I) drawn exclusively from the banded iron formation have yielded very interesting REE concentrations. Particularly, the sample No. P/M/10 has yielded 4.54% La, 6.24% Ce, 2.49% Nd, 0.18% Sm, 0.03% Eu and 0.0193% Th with Σ REE at 13.51% which is altogether a new high for REE in India. Viewed against a crustal abundance of 10 ppm to 50 ppm, these values assume greater significance.

Table I. REE concentrations in the BIF.

Sample No.	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Th
P/M/9	1110	1460	605	32	5.4	0.29	0.56	0.12	14
P/M/10	45440	62380	24860	1825	320	20	95	1.2	193
P/M/11	290	387	110	15	2.4	0.1	0.17	0.02	2.3

The REEs occur in dark coloured mesobands of widths varying from 2 mm to 20 mm in alternation with light coloured chert bands. The total width of the BIF varies from 5 m to 10 m. The BIF is highly sheared. Minor F_2 folds are seen at P/M/10 whose axial planes trend in N15°E-S15°W with 70° westerly dips and with a plunge of 50° in N15°E direction. Samples 9, 10 and 11 were picked up as a test case for gold. Since the programme was envisaged for gold, further samples from P/M/12 to P/M/105 were collected at 100 m intervals including bluish and grey quartz veins/permeating the sheared BIF all along the Basavanagudda-Ajjanahalli range. Quartz samples have analysed 0.1 to 0.7 ppm of gold by AAS. Their REE values are just normal and no anomalous concentrations are observed.

Further studies are being continued.

Geological Survey of India

Project: Chitradurga schist belt

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Reference

SAWKAR, R.H., HUSSAIN, S.M. and NAQVI, S.M. (1995). Gold mineralisation in the Sulphidic BIFs of Chitradurga Schist Belt, Karnataka - Possibility of New workable Gold Deposits, *Jour. Geol. Soc. Ind.* v. 46(1), pp. 91-93.

ANNOUNCEMENTS

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- 20-22, December, 1995. At the Department of Marine Sciences and Marine Biotechnology, Goa University, Taleigao Plateau, Goa. For details write to : Dr. G.N. Nayak, Convener, XII Convention of I.A.S., Dept. of Marine Sciences, Goa University, Goa - 403 205.

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30TH INTERNATIONAL GEOLOGICAL CONGRESS - 4-14 August, 1996,

Beijing, China, Short Course on "Procedure and application of granulometric analysis of ore minerals" 10-11, August, 1996, conveners: P.S. Ranawat and N.K. Sharma. Workshop on "Fluoride in water sources and human health." 10th August, 1996, Conveners : Vinod Agrawal and F.J. de Mulder. For further details write to : Scientific Programme Committee, 30 4/GC, P.O. Box. 823, Beijing 100 037, P.R. China.