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Study of REE potential in the lamprophyre dykes, Lower Gondwana Coal Fields, parts of eastern India

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The Early Cretaceous lamprophyre /ultrapotassic igneous intrusive rocks are very common in Lower Gondwana coal fields of Jharia, Raniganj, West Bokaro and Karanpura, India. The present work reports the total REE (i.e. ∑REE) concentration in such intrusive rocks from a few collieries of Jharia (10 samples) and West Bokaro (12-samples).

The ∑REE values of lamprophyre dykes of Jharia coal field (JCF) range from 250.3 to 1341.7ppm and those from West Bokaro between 73.4-2311.6 (average: 1147.4ppm). Srivastava et al., (2009) and Chalapathi Rao et al., (2014) have also reported such high ∑REE values between 901.4ppm to 4966.0 ppm (average:2066.1ppm) and 795.9 to 3208.2ppm (average: 1473.8ppm) respectively from JCF lamprophyre dykes. Chalapathi Rao et al., (2014) also have reported such high ∑REE from Raniganj coal field (range: ∑1208.5 to 5359.5ppm, average 2220.0ppm). However, only four LREEs (La to Nd) constitute up to 96% of the ∑REE. Even a ∑REE as low as 300ppm is considered economic (Montross et al., 2018). Hence such LREE concentration could be economically significant as these lamprophyre dykes and sills occur in a very large number in all these coal fields cutting across both the non-coal and coal bearing strata. Further work is in process to establish the total REE resource, its extraction potential and economic viability in all the coal fields of the basin.

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