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Magnatite-bearing boulders from Belihuloya area, Balangoda

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Some boulders rich in magnetite were found in the Belihuloya area, Balangoda. As ancient iron smelting sites are located in this area, these magnetite-bearing boulders cast doubt on the exact iron ore source used, as such is unknown to date with certainty. As this is the first discovery of these magnetite-bearing rocks, no detailed study has yet been done. Therefore, this study aims to reveal the occurrence and petrography of these rocks. A petrographic study and magnetite weight percentage analyses were carried out on rock samples which were collected during the field work. Fifteen thin sections were prepared for petrographic analyses. Those thin sections prepared were then studied under a polarizing microscope. Magnetite was separated from finely ground rock powder in selected samples using a hand magnet, and magnetite weight percentages were calculated using gravimetry. The boulders, ranging in size about 0.3 – 0.6 m, occur overlying the weathered bedrock at two main locations which are 1.5 kms apart. In hand specimen, coarse magnetite grains (0.5 – 1 cm) are clearly visible, and occur in a foliated texture. In thin section, magnetite shows disseminated and elongated grains varying in size. A relatively large amount of magnetite occurred in two rock samples from one of the two locations and in close association with quartz, sillimanite, and spinel. Other rock samples, which were from both locations, contain moderate to low amounts of magnetite associated with sillimanite, garnet, biotite and feldspar. Weight percentage analyses indicate that the rocks contain magnetite varying from 4-5 wt% to 27-30 wt%. Thus, the samples studied contain a relatively high amount of magnetite wt%. The boulders are likely transported. They can be grouped into two rock types as (1) magnetite rich foliated quartzite and (2) magnetite-bearing pelitic gneiss. Textural features of the foliated quartzite and pelitic gneiss containing magnetite suggest a metasedimentary origin for the iron ore. To our knowledge, such high amounts of magnetite-bearing rocks have not been previously reported. Importantly, these rocks could be one of the potential sources for the ancient iron smelting industry, which prevailed in the Belihuloya area.

Keywords: Iron ore, Iron smelting, Magnetite, Magnetite-bearing rocks

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