

Preliminary Identification of Rare Earth Metal Elements in Low-Grade Materials in Mondowe Area, Petasia District, North Morowali Regency

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Abstract. Economically viable rare earth metal resources can be found in various types of deposits. One of these can be found in laterite nickel deposits. The objective of this study is to identify the presence of rare earth elements in laterite nickel deposits and to classify rare earth elements into Heavy Rare Earth Elements (HREE) and Light Rare Earth Elements (LREE). This analysis is used as an initial reference to identify the presence of rare earth elements in low-grade nickel laterite deposits resulting from selective mining activities. Rare earth metals can be observed using SEM-EDX analysis. The results of this study indicate that SEM-EDX analysis detected rare earth metals such as Yttrium (Y), Lanthanum (La), Neodymium (Nd), Europium (Eu), Holmium (Ho), Ytterbium (Yb), and Lutetium (Lu), Scandium (Sc), Cerium (Ce), Praseodymium (Pr), Erbium (Er), and Thulium (Tm). These rare earth metals do not have good potential due to their very limited natural availability. The rare earth metals classified as heavy rare earth metals found in low-quality samples (waste) are Holmium (Ho), Erbium (Er), Thulium (Tm), Ytterbium (Yb), Lutetium (Lu), and Yttrium (Y). Meanwhile, the rare earth metals classified as light rare earth elements found in low-quality samples (waste) are Lanthanum (La), Cerium (Ce), Praseodymium (Pr), Neodymium (Nd), and Europium (Eu).

Keywords: Rare Earth Metals, Laterite Nickel, SEM-EDX, HREE, LREE