

Analisa pengaruh temperatur terhadap pembentukan senyawa titanomagnetite  $\text{Fe}_2\text{TiO}_4$ - $\text{Fe}_3\text{O}_4$  pada proses reduksi pasir besi menggunakan reduktor batubara dan aditif sodium sulfat  $\text{Na}_2\text{SO}_4$  = Analysis effect of temperature on the results of titanomagnetite  $\text{Fe}_2\text{TiO}_4$ - $\text{Fe}_3\text{O}_4$  formation in iron sand reduction using coal and sodium sulphate as an additive

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#### Abstrak

Indonesia merupakan negara yang kaya akan sumber daya alam khususnya pada bahan tambang. Pasir besi banyak ditemukan di pesisir Indonesia yang didalamnya mengandung beberapa mineral berharga seperti hematit  $\text{Fe}_2\text{O}_3$ , ilmenit  $\text{FeTiO}_3$  serta rutile  $\text{TiO}_2$ . Studi penelitian terkait pasir besi telah dikembangkan yang bertujuan untuk mengetahui pengaruh temperatur terhadap pembentukan titanomagnetit  $\text{Fe}_2\text{TiO}_4$ - $\text{Fe}_3\text{O}_4$  pada proses reduksi pasir besi menggunakan reduktor batubara dan aditif sodium sulfat  $\text{Na}_2\text{SO}_4$ . Hasil pengujian XRD dan semi-kuantitaif pada variasi temperatur  $700^\circ\text{C}$ ,  $800^\circ\text{C}$  dan  $900^\circ\text{C}$  diperoleh temperatur optimum yaitu temperatur  $900^\circ\text{C}$  dengan jumlah titanomagnetit  $\text{Fe}_2\text{TiO}_4$ - $\text{Fe}_3\text{O}_4$  sebesar 48.5.

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Indonesia is a developing country that has rich deposit of natural resources particularly in mineral ores. Many of iron sand found in coastal Indonesia that contains some valuable minerals such as hematite  $\text{Fe}_2\text{O}_3$ , ilmenite  $\text{FeTiO}_3$  sand rutile  $\text{TiO}_2$ . Research study related to iron sand has developed that aims to determine the effect of temperature against the form of titanomagnetite in reduction process using coal as reductor and sodium sulphate  $\text{Na}_2\text{SO}_4$  as an additive. The results of XRD characterization and semi quantitative with temperature variable  $700^\circ\text{C}$ ,  $800^\circ\text{C}$  and  $900^\circ\text{C}$  obtained that  $900^\circ\text{C}$  is an optimum temperature with amount of titanomagnetite  $\text{Fe}_2\text{TiO}_4$   $\text{Fe}_3\text{O}_4$  as much as 48.5.