SARI

Coal ash atau abu batubara merupakan sisa pembakaran batubara. *Coal ash* dapat bernilai ekonomis apabila dilakukan ekstraksi untuk mendapatkan *rare earth elements and yttrium* dari batubara yang terkayakan REY. Sampel batubara berasal dari Unit Pertambangan Tanjung Enim (UPTE), PT. Bukit Asam, di lapangan batubara Muara Tiga Besar Utara, Bangko Barat, dan Bangko Tengah. Sampel batubara dilakukan analisis ICP-MS dan ICP-AES untuk mengetahui senyawa oksida utama dan komponen REY serta unsur jejak pada batubara. Identifikasi mineral pada sampel batubara menggunakan analisis petrografi dan analisis XRD yang telah melalui tahap *ashing* 370º selama 8 jam dan 14 jam terlebih dahulu untuk menghilangkan material organik pada batubara. Sampel *coal ash* didapatkan melalui *ashing* menggunakan *furnace* 1000º selama 1 jam untuk mendapatkan komposisi yang menyerupai *fly ash.* Sampel *coal ash* dilakukan analisis petrografi dalam bentuk sayatan poles menggunakan mikroskop dengan perbesaran 400x dan metode *point counting* sebanyak 550 titik. Hasil pengamatan petrografi sayatan poles sampel *coal ash* berupa komponen penyusun inorganik dan organik. Sampel sayatan poles *coal ash* dengan konsentrasi REY tertinggi dilakukan analisis SEM-EDX untuk mengidentifikasi moda keterdapatan REY pada komponen penyusun *coal ash.* Hasil penelitian pada batubara ditemukan mineral kaolinit yang paling dominan, kuarsa, klorit, gipsum, smektit, haloisit, jarosit, pirit, albit, anhidrit, hematit, goetit, dan mg-kalsit. Komponen inorganik penyusun *coal ash* berupa *fe-oxide minerals* yang mendominasi, kuarsa, *glass (cenosphere dan pleiosphere), mullite,* dan Fe-spinel. Komponen organik penyusun *coal ash* berupa *unburned coal* atau UC. Moda keterdapatan REY pada komponen penyusun *coal ash* terikat secara merata pada material komponen organik dan inorganik berupa *glass* dan mineral oksida besi serta silikat. REY pada *coal ash* terdistribusi secara merata akibat terlepas dari ikatan mineral pembawa saat *proses ashing*.

Kata Kunci: REY, *coal ash, moda keterdapatan,* Unit Pertambangan Tanjung Enim

ABSTRACT

Coal ash is a material residu from coal combustion. Coal ash can be economically valuable if it is extracted to obtain rare earth elements and yttrium from coal with enriched REY. The coal samples collected from the Unit Pertambangan Tanjung Enim (UPTE), PT. Bukit Asam, *in the* Muara Tiga Besar Utara, Bangko Barat, *and* Bangko Tengah *coal fields. Coal samples were analyzed by ICP-MS and ICP-AES to determine the main oxide compounds, REY components and trace elements. Identification of minerals in coal samples using petrographic analysis and XRD analysis which the ashing process at 370º for 8 hours and 14 hours to remove organic materials. The Coal ash samples were obtained through ashing at 1000º with furnace for 1 hour to obtain a composition that resembles fly ash. The coal ash samples were analyzed by petrographic analysis in the form of polished section using a microscope with 400x magnification and 550 points of the point counting method to identify inorganic and organic components. The sample of the coal ash polished section with the highest REY concentration was analyzed by SEM-EDX to identify the modes of occurences REY in coal ash components. The results of the research on coal consisted kaolinite, quartz, chlorite, gypsum, smectite, halloysite, jarosite, pyrite, albite, anhydrite, hematite, goethite, and mg-calcite. The inorganic components found in coal ash are fe-oxide minerals that dominate, quartz, glass (cenosphere and pleiosphere), mullite, and Fe-spinel. The organic components in coal ash are unburned coal or UC. The mode of occurrences REY in the constituent components of coal ash is evenly bonded to the organic and inorganic component materials in the form of glass and iron oxide and silicate minerals. REY in coal ash is evenly distributed due to being separated from the carrier mineral bonds during the ashing process.*

Key words: *REY, coal ash, modes of occurences,* Unit Pertambangan Tanjung Enim