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Abstract Index

Permana, Darsa (R&D Centre for Mineral and Coal Technology)
Analysis of Regional Regulation on General Mining Sector (Mineral and Coal)
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As Law No. 22 Year 1999 on Regional Government was implemented and then renewed by Law No. 32 Year 2004 on the same subject, all autonomous areas have issued various regional regulations, including that on general mining (mineral and coal). This is in line with the requirement of all autonomous areas for authority in managing their own regions based on the autonomy principles.

After one decade since the regulation was applied, evaluation conducted by the government revealed that regional regulation in the general mining sector oriented mostly on increasing regional revenue without taking into consideration the existing legal principles. Surveys on 8 provinces showed similar facts, and the condition led to an uncondusive business climate that could hinder the economic growth and the regions' investment opportunity.

Keywords: regional autonomy, regional regulation, general mining, regulation

Huda, Miftahul et. al (R&D Centre for Mineral and Coal Technology)
Evaluation of Iron Ore From South Kalimantan and Tailing of PT. Freeport as Catalyst Precursors for Direct Coal Liquefaction
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P. 8 - 15

Research on catalyst derived from minerals for coal liquefaction reaction remains attractive since Indonesia has various kinds of minerals which are suitable to be used as catalyst precursors. In this research, iron ore from South Kalimantan and tailing of PT. Freeport were examined their activities to find the most suitable catalyst precursor for coal liquefaction reaction. Experiments were performed using a 0.5 litre batch type autoclave equipped with a horizontal shaking unit (54 times per minute) at reaction temperature, initial hydrogen pressure and reaction time of 400°C, 10 MPa and 1 hr, respectively. The result showed that

tailing produced lower oil yield and coal conversion than those of iron ore. Tailing is suspected to experience slower hydrogen transfer rate during coal liquefaction since it produced larger pyrrhotite crystal size than that of iron ore.

Keywords: coal liquefaction, catalyst precursor, iron ore, tailing of PT. Freeport

Aziz, Muchtar and Wahyudi, Agus (R&D Centre for Mineral and Coal Technology)
Extraction of Alumina from Bauxite Residue for Preparation of Alums and Poly Aluminum Chloride
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The chemical composition of West Kalimantan bauxite is 45 pct Al_2O_3 and 16 pct Fe_2O_3 that has been extracted to produce alumina and bauxite residue (red mud). The residues contains Al_2O_3 20 pct and Fe_2O_3 about 37 pct, wich was furthermore processed by roasting or lime-soda sinterization at temperature of 800-1100°C. The sintered product was leached with sodium carbonate solution to produce soluble sodium aluminate (2NaAlO_2). The solution obtained was then precipitated to produce hydrated alumina ($\text{Al}(\text{OH})_3$). Hydrated alumina was then sulfateized by adding ammonium hydroxide, and followed by crystallization to produce high purity of ammonium aluminum sulfate crystals (alums). In addition, hydrated alumina was also chlorinated in stoichiometric amount at mol ratio of $\text{OH}/\text{Al} = 0.5 - 1.5$ to form polyaluminum chloride (PAC). The residue obtained from leaching was concentrated by 1000 gauss of magnetic separator to produce iron concentrate as a by product. As the results, sulfatation of hydrated alumina with addition of ammonium hydroxide results high grade of ammonium aluminum sulfate ($\text{NH}_4\text{Al}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$) crystals. Chlorination of hydrated alumina in stoichiometric amount at mol ratio of $\text{OH}/\text{Al} = 1.0$ results polyaluminum chloride (PAC) that quality is adjacent to the first type of PAC. Through the soda-lime sinter process, it can also produce iron concentrate having grade of 66 % Fe_2O_3 with 40 % of recovery.

Keywords:bauxite residue, lime-soda sinter process, hydrated alumina, alums, PAC

Wahyudi, Agus et. al (R&D Centre for Mineral and Coal Technology)

Preparation of Meso Porous Silica from Bentonite by Ultrafine Grinding and Selective Leaching
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Preparation of meso porous silica from bentonite had been conducted by ultrafine grinding and leaching. The bentonite was taken from Nanggung, Bogor, West Java; it contains montmorillonite with porous structure. The ultrafine grinding was carried out using planetary ball mill (PBM) in wet condition (wet milling) in methanol. Optimum milling time was reached in 30 hours and it produced 77.4 nm of particle size. The process was continued with selective leaching in sulphuric acid solution to increase the amount of SiO₂ from 54.13% to 86.21%, which decreased Al₂O₃ and Fe₂O₃ content gradually from 23.09% and 7.33% to 4.96% and 0.89% respectively. The leaching process produced porous silica material with pore size 6.5 nm (meso porous); 278 m²/g of surface area and 0.75 mL/g of pore volume.

Keywords: meso porous silica, bentonite, ultrafine grinding, selective leaching

Kusnida, Dida, Wijaya, P.H. and Widodo, J. (Marine Geological Institute of Indonesia)

Barium Concentration in Deep Sea Surface Sediments from Tomini Basin: Vertical Distribution and Occurrence
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P. 34 - 38

The concentrations of trace elements (Th, Zr, Ba, Ce, Nb and Sr) in the sediments core from Tomini Basin, Sulawesi were studied to establish their vertical distributions and occurrence. However, the highest concentration of trace elements was dominated by barium (> 300 ppm). Results indicate that barium composi-

tion in the surface sediments generally increase downward. Vertical distribution of barium in Tomini Basin indicates that its sedimentary environment has a high palaeo-productivity.

Keywords: barium, trace elements, deep sea, surface sediments, Tomini Basin

Ningrum, Nining S., Huda, Miftahul and Prijono, Hermanu (R&D Centre for Mineral and Coal Technology)

The Preliminary Study of Co-processing Coal with Used Tire and Asphalt in Coal Liquefaction
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Currently, most of used tire and asphalt are discarded after use and end up in sanitary landfill, on the other side Indonesia has huge resources of coal. In order to utilize those hydrocarbons and to develop coal utilization, they change as co-processing in coal liquefaction. Co-processing of coal with those hydrocarbons was a coal liquefaction combined with hydro treatment of hydrocarbon altogether in a reactor. The objective of the research is to find out the hydrocarbon material that synergy with coal in the coal liquefaction to obtain high conversion and oil product. The research were carried out in a stirred high-pressure autoclave with a capacity of 5 liters with the condition: the initial pressure of hydrogen was 100 bar of pressure, the temperature was 400°C, the reaction temperature was allow to 60 minutes, the ratio of sulphur to Fe was 2, the variable amount of used tire and asphalt were 10, 20, 30, 40, and 50% of coal. The experimental results show that the synergy between coal and used tire and asphalt occurred, the percentage of conversion increased at 18% and 12% respectively.

Keywords: coal liquefaction, co-processing, used tire, asphalt