SINTESIS DAN KARAKTERISASI LEMPUNG TERPILAR Al/Zr DARI LEMPUNG ALAM

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RINGKASAN

Telah dilakukan sintesis lempung terpilar dengan metode interkalasi lempung alam dengan kation aluminium-zirkonium yang bertindak sebagai penukar kation antar lapis lempung. Lempung alam yang digunakan berasal dari Boyolali, pilarisasi dilakukan dengan cara mencampurkan lempung dengan larutan pemilar aluminium-zirkonium dengan komposisi 85% aluminium dan 15% zirkonium selama 16 jam. Lempung terpilar diperoleh dengan mengkalsinasi lempung terinterkalasi sehingga terbentuk tiang-tiang penyangga lapisan yang bersifat permanen. Kalsinasi dilakukan pada suhu 150^{o}C, 250^{o}C, 300^{o}C, dan 350^{o}C selama 2 jam. Suhu kalsinasi divariasi untuk melihat pengaruh suhu tersebut terhadap *basal spacing* dan luas permukaan lempung terpilar. *Basal spacing* dipelajari dengan menggunakan metode Difraksi Sinar-X (XRD) dan luas permukaan dengan metode adsorpsi gas nitrogen melalui persamaan *Brunauer Emmett Teller* (BET). Hasil analisis menunjukkan bahwa lempung terpilar aluminium-zirkonium yang terbentuk memiliki *basal spacing* sebesar 15,83 Å pada suhu kalsinasi 150^{o}C, luas permukaan spesifik meningkat sampai 30,39%, jari-jari pori rata-rata sampai 4,71%, serta volume total pori sampai 7,81%. Dari hasil yang diperoleh dapat disimpulkan bahwa lempung alam asal Boyolali dapat dipilarisasi dengan aluminium-zirkonium.

SUMMARY

The pillared clay synthesis was conducted by intercalation natural clay with aluminium-zircon which act as cation changer among clay layers. Natural clay that used come from Boyolali, pillarization was conducted by mixing the clay with pillarizator aluminium-zircon which is contains 85% aluminium and 15% zircon during 16 hours. The pillared clay obtained by calcinating intercalated clay until formed permanent support pillars. The calcination was doing at 150^{o}C, 250^{o}C, 300^{o}C, and 350^{o}C during 2 hours. Calcination temperature was varied out to observe its influence to basal spacing and surface area of pillared clay. Basal spacing learned using defraction X-ray (XRD) method and surface area using adsorption nitrogen through Brunauer, Emmett, and Teller (BET) equation. The analysis result show that pillared clay aluminium-zircon that formed have basal spacing 15,83 Å at 150^{o}C calcination temperature, specific surface area increase up to 30,39%, the average of porous radius is 4,71%, and total volume porous up to 7,91%. The conclusion of this result is natural clay come from Boyolali can be pillarizated with aluminium-zirconium.

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