SINTESIS DAN KARAKTERISASI LEMPUNG TERPILAR TiO_2

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RINGKASAN

Idonesia mempunyai bahan alam berupa tanah lempung yang berlimpah dan belum dimanfaatkan secara optimal. Beberapa penelitian telah dilakukan untuk memanfaatkan lempung menjadi material baru yang lebih berguna misalnya sebagai katalis atau adsorben. Dengan melakukan modifikasi strukturnya, lempung dapat diolah menjadi material baru dengan sifat-sifat fisik dan kimia lebih baik dari sebelumnya.

Sintesis lempung terpilar TiO_2 dilakukan dengan cara interkalasi larutan pemilar titanium pada lempung dilanjutkan dengan kalsinasi. Suhu kalsinasi divariasi untuk melihat pengaruhnya terhadap *basal spacing*, stabilitas termal, angka keasaman, situs asam Brønsted-Lewis dan luas permukaan lempung terpilar.

Karakterisasi *basal spacing* dan stabilitas termal menggunakan XRD, angka keasaman dan situs asam Brønsted-Lewis menggunakan adsorpsi piridin/IR dan luas permukaan menggunakan metode adsorpsi gas nitrogen melalui persamaan BET. Hasil analisis menunjukkan bahwa lempung terpilar TiO_2 mempunyai *basal spacing* 17,80 Å, stabilitas termal pada suhu 200^oC, keasaman 2,3575 mmol/gram, keberadaan situs asam Brønsted-Lewis seimbang dan luas permukaannya 169,151 m^2/g.

Hasil ini menunjukkan karakter dari lempung terpilar TiO_2 untuk kepentingan adsorpsi atau katalis akan lebih maksimal. Sehingga lempung terpilar TiO_2 siap untuk aplikasi lebih lanjut sesuai kebutuhan yang diinginkan.

SUMMARY

Indonesia has natural materials in the form of clays which have not been exploited optimally. Some research have exploited than becoming better new materials for example as catalyst or adsorbent. By modification of its structure, clays can be processed to be new materials with better physical and chemical properties.

The pillared clay TiO_2 synthesis was conducted by intercalation of titanium solution on clay and followed by calcinations. Calcination temperature was varied out to observe its influence to basal spacing, thermal stability, acidity, Brønsted-Lewis acid sites and surface area of pillared clay.

Characterization of basal spacing and thermal stability used XRD, acidity and Brønsted-Lewis acid sites used pyridine adsorption/IR and surface area used adsorption of nitrogen method through BET equation. Analysis result shown that TiO_2 pillared clay had basal spacing 17,80 Å, thermal stability until 200^oC, acidity 2.3575 mmol/g, Brønsted-Lewis acid sites was balanced and surface area 169.151 m^2/g.

This result shown character of TiO_2 pillared clay for adsorption or catalyst will be more maximal. So TiO_2 pillared clay is ready to further application according to requirement of needed.

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