

**PENGARUH SURFAKTAN DODESILAMIN PADA SINTESIS LEMPUNG
TERPILAR SiO₂/TiO₂ SERTA APLIKASINYA SEBAGAI FOTOKATALIS
DEGRADASI RHODAMIN**

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RINGKASAN

Telah dilakukan penelitian pengaruh penambahan surfaktan dodesilamin pada sintesis lempung terpillar silika (SiO₂) dengan interkalasi TEOS (tetraetilortosilikat) dari lempung alam Pontianak. Variasi jumlah penambahan surfaktan dodesilamin bertujuan untuk mengetahui hubungan jumlah surfaktan dodesilamin terhadap *basal spacing*, luas permukaan spesifik, distribusi pori dan volume total pori.

Analisis *basal spacing* menggunakan difraksi sinar X sedangkan luas permukaan spesifik, distribusi pori dan volume total pori menggunakan analisis BET. dan untuk mengetahui absorbansi dari zat warna rhodamin menggunakan spektrofotometer UV-VIS. Tahap pilarisasi terdiri atas dua tahap yaitu tahap interkalasi surfaktan dodesilamin dan TEOS serta tahap kalsinasi pada temperatur 600°C yang selanjutnya diimpregnasikan TiCl₃ kedalamnya dengan variasi volume untuk aplikasinya sebagai fotokatalis degradasi rhodamin.

Basal spacing dan volume total pori lempung terpillar meningkat dengan optimasi pada perbandingan molar dodesilamin 1 : 35 terhadap lempung alam. Luas permukaan lempung terpillar silika meningkat lebih dari 10 kali lipat dibandingkan dengan lempung alam. Luas permukaan spesifik lempung terpillar meningkat dengan meningkatnya penambahan surfaktan dodesilamin. Sedangkan distribusi pori pada lempung terpillar tidak merata disebabkan karena tidak adanya penambahan air dalam sintesis. Aplikasi dari lempung terpillar SiO₂/TiO₂ sebagai fotokatalis reaksi degradasi rhodamin dengan pengaruh radiasi cahaya UV. Semakin banyak TiO₂ yang teremban maka semakin kecil absorbansi dari zat warna Rhodamin.

SUMMARY

The research on the effect of addition of dodesylamine surfactant on the synthesis of silica pillared clay (SiO_2) by TEOS (tetraethylorthosilicate) intercalation from Pontianak natural clay had been done. Variation on the amount of dodesylamine added was done to find out the influence of surfactant addition on the basal spacing, specific surface width, pore distribution and pore total volume of the synthesized pillared clay.

Analysis of basal spacing was carried out by X-ray diffraction whereas the specific surface width, pore distribution and pore total volume were determined by BET method. Clay pillarization consisted of two main steps, intercalation of dodesylamine and TEOS, and calcination at $600\text{ }^\circ\text{C}$.

The research data showed that the basal spacing and pore total volume of pillared clay increased after the surfactant addition and were optimally found at the dodesylamine:natural clay molar ratio of 1:35. The surface area of silica pillared clay increased more than 10 times of natural clay's. Furthermore, the specific surface width of clay increased with the increase of dodesylamine addition whereas its pore distribution was found to be inequitable since there was no water addition during synthesis. Photocatalytic application of the synthesized $\text{SiO}_2/\text{TiO}_2$ pillared clay was carried out in the degradation of rhodamine by UV radiation. The more TiO_2 impregnated on the clay, the less rhodamine absorbed.

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