

# Adsorpsi selektif sba-15 yang difungsionalisasikan dengan 3-chloropropyl trimethoxysilane cptms terhadap seng untuk aplikasi remediasi limbah cair = Selective adsorption of sba 15 which functionalize with 3 chloropropyl trimethoxysilane cptms towards zinc for liquid waste remediation

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## Abstrak

### <b>ABSTRACT</b><br>

Silika mesopori SBA-15 telah disintesis menggunakan tetraorthosilicate sebagai prekursor dan kopolimer triblok P123 sebagai template melalui proses sol-gel dan diteruskan melalui proses hidrotermal dan kalsinasi. Kemudian, SBA-15 di modifikasi menggunakan agen fungsionalisasi CPTMS 3-chloropropyl trimethoxysilane . Dalam penelitian ini, dibandingkan nilai penghilangan Zn menggunakan adsorban SBA-15 dan SBA-15-CPTMS. Keduanya digunakan sebagai adsorban untuk Zn dari air limbah industri menggunakan sampel air laboratorium. Adsorban tersebut juga di karakterisasi menggunakan SAXRD, FTIR untuk mengetahui gugus organik dan AAS untuk pengukuran konsentrasi ion dalam lautan setelah proses adsorpsi. Berdasarkan hasil katakterisasi BET, SBA-15 memiliki luas permukaan 831,996 m<sup>2</sup>/g, nilai tersebut lebih tinggi dibandingkan luas permukaan SBA-15-CPTMS sebesar 711,061 m<sup>2</sup>/g. Dari hasil AAS, SBA-15-CPTMS memiliki efektivitas dalam adsorpsi logam Zn lebih rendah daripada SBA-15 murni.

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Mesoporous silica SBA 15 has been synthesized using Tetraorthosilicate as precursor and Pluronic 123 triblock copolymers as template through the sol gel method then continue with hydrothermal and calcination process. The surface of SBA 15 was modified using functionalization agent CPTMS 3 chloropropyl trimethoxy silane . In this study, we compared the percentage of Zn removal using CPTMS SBA 15 and SBA 15 systems. These SBA 15 CPTMS and SBA 15 were used as adsorbent of Zn from industrial waste water using laboratory water samples. The materials were characterized by SAXRD, the presence of organic group was demonstrated by FTIR, and the ions concentration in solution after adsorption process was determined by AAS. SBA 15 was found to have surface area of 831.996 m<sup>2</sup> g higher than SBA 15 CPTMS which has surface area at 711.061 m<sup>2</sup> g. CPTMS SBA 15 showed lower effectiveness in adsorption of those metals than pure SBA 15.