

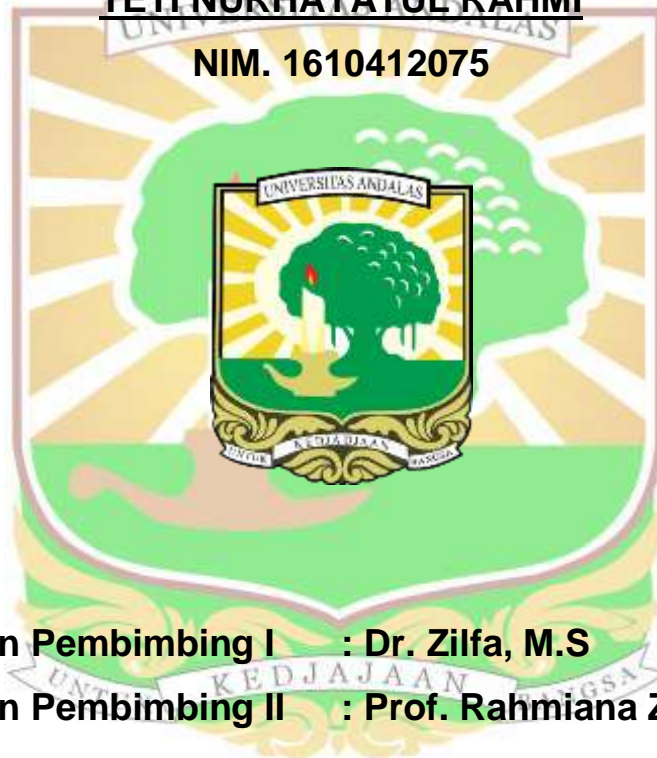
**PEMANFAATAN ZEOLIT ALAM *CLINOPTILOLITE-Ca* SEBAGAI  
PENDUKUNG KATALIS  $ZnO$  UNTUK MENDEGRADASI ZAT WARNA  
*METHYL ORANGE* DAN *RHODAMINE B* SECARA SIMULTAN  
DENGAN METODA FOTOLISIS**

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**JURUSAN KIMIA  
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM  
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## INTISARI

### PEMANFAATAN ZEOLIT ALAM *CLINOPTILOLITE-Ca* SEBAGAI PENDUKUNG KATALIS ZnO UNTUK MENDEGRADASI ZAT WARNA *METHYL ORANGE* DAN *RHODAMINE B* SECARA SIMULTAN DENGAN METODA FOTOLISIS

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Penelitian mengenai degradasi zat warna *Methyl Orange* dan *Rhodamine B* secara simultan dengan metoda fotolisis menggunakan katalis ZnO/zeolit telah dilakukan. Penelitian yang dilakukan bermaksud untuk mengurangi kadar zat warna *Methyl Orange* dan *Rhodamine B* yang diketahui berbahaya bagi lingkungan dan kesehatan. Pada penelitian ini digunakan zat warna *Methyl Orange* 6 mg/L dan *Rhodamine B* 2 mg/L, selanjutnya didegradasi secara fotokatalisis dengan beberapa variasi waktu dan massa katalis untuk mengetahui kondisi optimum dari degradasi masing-masing zat warna tersebut. Kondisi optimum tersebut selanjutnya digunakan dalam proses degradasi *Methyl Orange* dan *Rhodamine B* secara simultan. Berdasarkan hasil penelitian diperoleh persentase degradasi dengan Penambahan katalis ZnO/zeolit untuk *Methyl Orange* adalah 93,27% (massa katalis 0,8 g dan waktu irradiasi 90 menit) dan *Rhodamine B* sebesar 94,00% (massa katalis 0,6 g dan waktu irradiasi 60 menit). Pada tahap selanjutnya campuran *Methyl Orange* 6 mg/L dan *Rhodamine B* 2 mg/L didegradasi secara simultan berdasarkan kondisi optimum masing-masing zat warna, dimana pada kondisi optimum *Methyl Orange* persen degradasi yang diperoleh sebesar 82,41% ( $\lambda$  463 nm) dan 94,85% ( $\lambda$  553 nm) dan pada kondisi optimum *Rhodamine B* persen degradasi yang diperoleh sebesar 66,44% ( $\lambda$  463 nm) dan 95,15% ( $\lambda$  553 nm). Berdasarkan data tersebut dapat dikatakan bahwa katalis ZnO/zeolit berhasil mendegradasi *Methyl Orange* dan *Rhodamine B* secara simultan.

Kata Kunci: ZnO/zeolit, *Methyl Orange*, *Rhodamine B*, Fotolisis

## ABSTRACT

### UTILIZATION OF NATURAL ZEOLITE CLINOPTILOLITE-CA AS SUPPORT CATALYST ZnO TO DEGRADATE METHYL ORANGE AND RHODAMINE B SIMULTANEOUS WITH PHOTOCATALYSIS METHOD

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Research on the simultaneous degradation of the dye Methyl Orange and Rhodamine B by the photolysis method using a ZnO / zeolite catalyst has been carried out. The research that was conducted was intended to reduce the levels of the dyes Methyl Orange and Rhodamine B which are known to be harmful to the environment and health. In this study, Methyl Orange 6 mg / L and Rhodamine B 2 mg / L dyes were used, then they were degraded by photocatalyst with several variations in time and catalyst mass to determine the optimum conditions for degradation of each of these dyes. The optimum condition is then used in the simultaneous degradation of Methyl Orange and Rhodamine B. Based on the research results, the percentage of degradation with the addition of ZnO / zeolite catalyst for Methyl Orange was 93.27% (catalyst mass 0.8 g and irradiation time 90 minutes) and Rhodamine B was 94.00% (catalyst mass 0.6 g and time irradiation 60 minutes). In the next stage, the mixture of Methyl Orange 6 mg / L and Rhodamine B 2 mg / L was degraded simultaneously based on the optimum conditions of each dye, where at the optimum condition Methyl Orange the percentage of degradation obtained was 82.41% ( $\lambda$  463 nm) and 94.85% ( $\lambda$  553 nm) and at optimum conditions Rhodamine B the degradation percent obtained were 66.44% ( $\lambda$  463 nm) and 95.15% ( $\lambda$  553 nm). Based on these data, it can be said that the ZnO / zeolite catalyst was successful in degrading Methyl Orange and Rhodamine B simultaneously.

Keywords: ZnO/zeolite, Methyl Orange, Rhodamine B, photolysis