# ABSTRAK

## PENGOLAHAN LIMBAH *PALM OIL MILL EFFLUENT* (POME) MENGGUNAKAN KATALIS ZnO DENGAN PENAMBAHAN Cu UNTUK MENINGKATKAN KINERJA FOTOKATALITIK

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Seiring berjalanya waktu hasil panen kelapa sawit semakin meningkat setiap tahunnya, yang disertai juga peningkatan limbah yang dihasilkan. Limbah dari kelapa sawit adalah limbah cair atau yang dikenal dengan *palm oil mill effluent* (POME), Penelitian ini bertujuan mendapatkan katalis ZnO/Cu dan menentukan berat serta waktu optimal untuk menurunkan nilai COD, TSS, dan pH. Katalis ZnO/Cu disintesis dengan metode kopresipitasi dan diaplikasikan melalui proses fotokatalitik dimana teknologi yang memanfaatkan katalis dan cahaya sinar Ultraviolet (UV). Pengaplikasian Katalis ZnO/Cu terhadap limbah POME dengan variasi berat ZnO yaitu 100mg 150mg dan 200mg serta waktu penyinaran 30,60,90,120 dan 150 menit. Dari sampel yang ada hasil terbaik diperoleh pada berat 200 mg dan waktu penyinaran 150 menit dengan COD 216 mg/l, TSS 20,00 mg/l, dan pH 7,39 yang memenuhi baku mutu.

***Kata Kunci*** **:** Sintesis,Katalis ZnO/Cu, Fotokatalis,COD,TSS,pH

# ABSTRAC

## THE PROCESSING OF PALM OIL MILL EFFLUENT (POME) USING ZnO CATALYST WITH CU ADDITION TO ENHANCE PHOTOCATALYTIC PERFORMANCE

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Over time, the yield of oil palm had continued to increase each year, which was followed by a rise in the amount of waste produced. One of the main wastes from palm oil processing was liquid waste, commonly known as Palm Oil Mill Effluent (POME). This study aimed to obtain a ZnO/Cu catalyst and to determine the optimal catalyst weight and irradiation time to reduce COD, TSS, and pH values. The ZnO/Cu catalyst was synthesized using the co-precipitation method and was applied through a photocatalytic process, which utilized catalysts and ultraviolet (UV) light. The catalyst was applied to POME with ZnO weight variations of 100 mg, 150 mg, and 200 mg, and UV irradiation times of 30, 60, 90, 120, and 150 minutes. The best result was obtained at a catalyst weight of 200 mg and an irradiation time of 150 minutes, resulting in COD of 216 mg/L, TSS of 20.00 mg/L, and pH of 7.39, which met the wastewater quality standards.

***Keywords:*** Synthesis, ZnO/Cu Catalyst, Photocatalysis, COD, TSS, pH