

**SYNERGISTIC SEPARATION OF CU(II) AND
ZN(II) FROM AQUEOUS SOLUTION BY D2EHPA
AND TBP DISSOLVE IN WASTE VEGETABLE
OIL**

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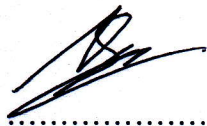
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AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

I, hereby acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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SUPERVISOR'S CERTIFICATION

We declared that we read this thesis and in our point of view this thesis is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.



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ABSTRACT

Synergistic separation is studied as zinc and copper placed in different container is extract at same condition and the percent extraction is observed. The separation can be determined as at a condition, one metal ion is dominated while another metal ion is neglected. On the other condition, the metal ion is vice versa. This kind of metals are toxic if release to environment but having high value to industry. The usual solvents used by researchers are from petrochemical which very hazardous. By placing with waste vegetable oil, the solvent is greener and cost saving. This study also using waste vegetable oil as solvent. This study is required to identify the best condition on separation metals because the industrial waste water containing numbers of valuable metals which required in single element. The objective through the study is to determine the effect of different pH values on the extraction of Cu (II) and Zn (II) and determine the effect of different ratio of concentration of D2EHPA and TBP as organic phase on the extraction process. The process of separation of metal ion from aqueous solution is liquid-liquid extraction. The result showed that the synergistic by two extractants are low in percent extraction compared to single extractant. The ratio of D2EHPA and TBP at 1:2 showed the extraction of Zn (II) is the highest than other ratio but vice versa for Cu (II).