

CORROSION INHIBITION TEST OF SPEARMINT LEAF OIL (*Mentha Spicata* L.) ON COPPER: AN ELECTRONIC POCKETBOOK AS A SUPPLEMENT TO REDOX REACTION CHEMISTRY LEARNING

ABSTRACT: Corrosion is a metal degradation process that can lead to significant losses, making corrosion prevention efforts crucial. One environmentally friendly method to inhibit corrosion is the use of organic inhibitors. Spearmint leaves (*Mentha spicata* L.) have potential as an organic corrosion inhibitor for copper, due to their content of heteroatoms and pi bonds. The purpose of this study is to evaluate the corrosion inhibition efficiency of spearmint leaf oil on copper with varying inhibitor concentrations and immersion times, to study the inhibition process based on quantum chemical parameters and adsorption energy, and to assess the feasibility of developing an electronic pocketbook for high school (SMA/MA) students. The methods used include the weight loss technique for experimental studies and a computational chemistry approach to identify the compounds most responsible for corrosion inhibition. The pocketbook development was conducted using the 4D model. The results showed that the highest inhibition efficiency achieved was 66.77% at a concentration of 4000 ppm with an immersion time of 24 hours. Based on the theoretical study of quantum chemical parameters, the compound carvone was found to play a dominant role in copper corrosion inhibition, supported by the most favorable adsorption energy value of -66.93072477 kJ/mol. The developed pocketbook was validated with a score of 0.87, categorized as highly valid, making it suitable for use at the high school level (SMA/MA).

Primary author: ZULHIJAYANTI, Rini (University of Mataram)

Co-authors: SIAHAAN, Jeckson (University of Mataram); HADISAPUTRA, Saprizal (Chemistry Education Department, FKIP, University of Mataram)

Presenter: ZULHIJAYANTI, Rini (University of Mataram)

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