

UNIVERSITI TEKNOLOGI MARA

**EXPERIMENTS ON MICROMETER AND
NANOSIZES OF SHALE AND LATERITIC
ROCK AS COLORANTS ON CANVAS**

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Thesis submitted in fulfillment of the requirements
for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledge as reference work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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

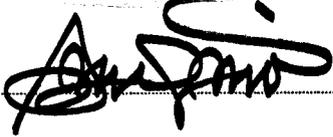
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ABSTRACT

Malaysian lands are very rich in natural resources especially Shale and Lateritic rocks. The transformations of coloured rocks to colorants for artwork can give a huge impact for the government, industries and consumer. This research project aimed to process and produce natural colorants from shale and lateritic rocks into two sizes which are in micrometer and nano size range. X-Ray Fluorescent (XRF) was carried out to identify element content in each rock whilst Field Emission Scanning Electron Microscopy (FESEM) was performed in order to determine the sizes of the rocks after grinding accurately. Two grinding methods were carried out, which were by using jar mill and planetary mono mill. The rock colorants were applied to cotton, linen and polyflax based canvasses. All of the rock colorants were mixed with acrylic medium and then applied on canvas by nylon flat brush. The applications on canvases were divided into three stages which are single colour application, tint and shade and the colour mixing. The painted samples (single colour application) were then evaluated based on fastness to light. All of the painted samples in micrometer and nano sizes colorants exhibited excellent results of light fastness testing. The ranges of colours that are available when converted to colorants are not wide but enough to be used as a substitute colorants beside synthetic colorants.

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