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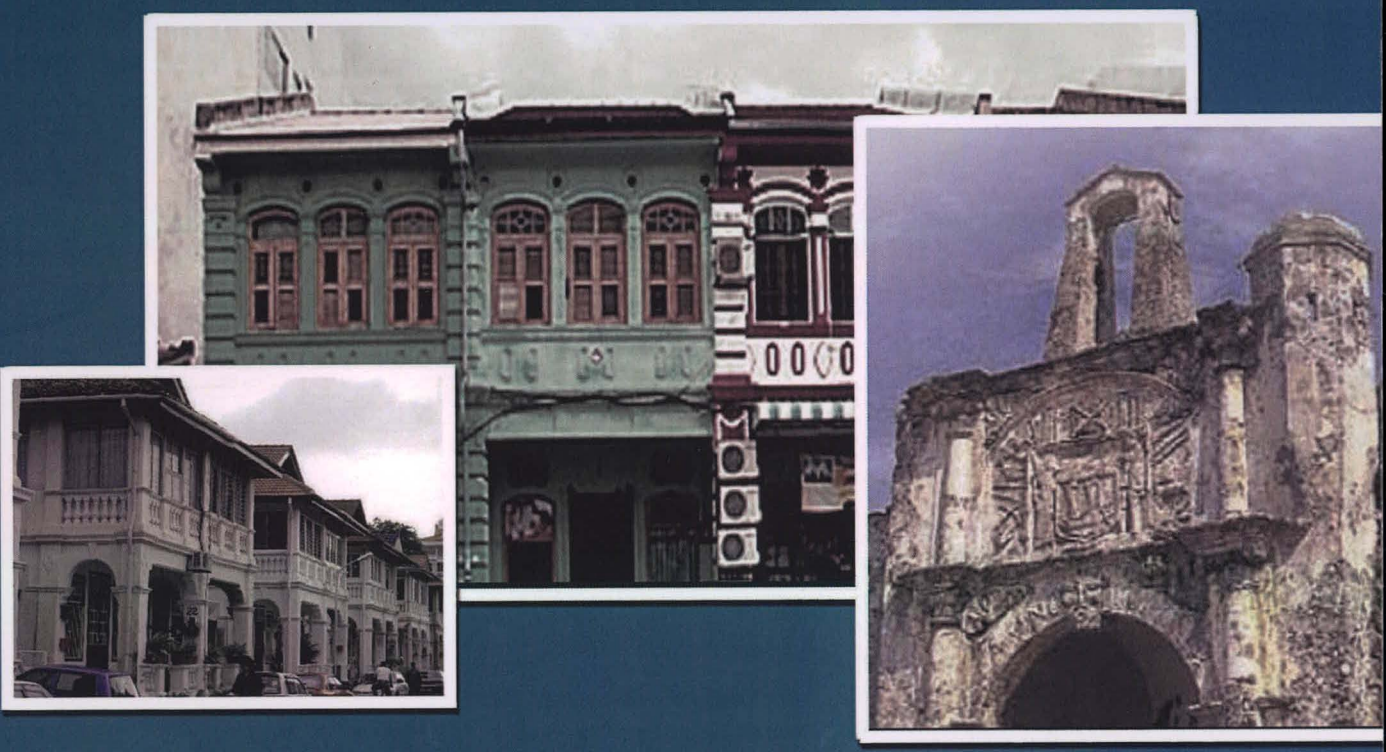

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Contents

CHAPTER 4

HISTORICAL MALAY WORLD QUR'ANS: AN INVESTIGATION ON MATERIAL TECHNOLOGY OF THE COLORANTS

Rajabi Abdul Razak, Mandana Barkeshli

ABSTRACT

The application of Polarized Light Microscopy (PLM) as a main instrument and supportive by advanced scanning electron microscopy with energy dispersive X-ray (SEM-EDX), X-ray Diffraction (XRD) and Fourier-transform Infra-Red Spectrometry (FTIR) to the research is reported. The result gained 15 Qur'an samples from the collection of Islamic Arts Museum Malaysia which represent a cross section of the different regional Historical Malay world Quranic styles. Their technical study is contribute to the art historical research, answering questions about the type of material used, particularly pigment and dyes, their sources, and the manner in which they have been both prepared and applied. Although this research presented here is a preliminary investigation, it is nonetheless, one of the first ever attempts to characterize or identify the material technology of the colorants used in Malay world Qur'ans.

Keywords: Colorants, FTIR, Malay world Qur'ans, PLM, SEM-EDX, XRD

INTRODUCTION

The history of pigments is intimately connected with the development of technology and chemistry. At initial stage, Richard Wilson replies angrily by saying 'too many colours already' upon being told of a new pigment. The painter doubtless advocated limiting the palette to a few established artists' colours, and yet his dismissal of a new pigment may surprise those who are aware of the number of useful pigments which were introduced during the eighteenth and nineteenth centuries and which remained as important artist colours until the present time [1]. Since 1835, there are evolutions of the pigments which difficult to identify due to new manufactured pigments which include modern colour and exclude the poetical quotations and the comments on complex or obsolete pigments.

There are three categories of pigments: mineral, inorganic (synthetic materials) and organic (plant and animal sources). Mineral pigments are an inorganic pigment of mineral origin and those made from inorganic chemicals or raw materials not in themselves colouring matters. The earliest known pigments were natural minerals. Natural iron oxides give a range of colours and are found in many Palaeolithic and Neolithic cave paintings. Two examples include Red Ochre, anhydrous Fe_2O_3, and the hydrated Yellow Ochre ($Fe_2O_3.H_2O$). Charcoal, or carbon black, has also been used as a black pigment since prehistoric times. Amongst these