

UNIVERSITI TEKNOLOGI MARA

**AN EXPLORATORY STUDY ON
THE AESTHETIC POTENTIAL OF
NATURAL FIBER WASTE
COMPOSITES FOR PRINTMAKING
MATRIX IN ARTISTIC PRACTICE**

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ABSTRACT

This research explores the potential of natural fiber waste composites as an alternative material for printmaking matrix within artistic practice. Grounded in artistic experimentation and material exploration, the study investigates how locally available agricultural by-products, sawdust, pineapple peel, sugarcane fiber (bagasse) and coconut coir, can be repurposed into functional composite matrix using an epoxy-based formulation. By integrating semi-scientific laboratory procedures with studio-based printmaking practice, the research evaluates the composites' physical structure, surface texture and print quality in both relief and hybrid techniques. The investigation unfolds in three phases: (RO1) material formulation and physical testing, (RO2) creative experimentation and aesthetic evaluation and (RO3) reflective synthesis on the material's expressive and artistic viability. While natural fiber composites have been widely examined in industrial contexts, their potential as printmaking matrix in artistic practice remains largely unexplored. This project addresses that gap by developing and accessing new composite matrix that merge scientific rigour with creative inquiry and tactile sensitivity. Conducted in collaboration with the Polymer Department at Universiti Teknologi MARA (UiTM), the study adopts a practice-based and interdisciplinary approach that bridges material science with artistic research. The findings reveal that natural fiber waste composites exhibit distinctive tactile, visual and tonal characteristics, offering rich textural depth, subtle variations in mark-making and printing effects unattainable through conventional materials such as wood or linoleum. Beyond technical performance, the study positions these composites as catalysts for artistic exploration, expanding the expressive vocabulary of printmaking and reinforcing the relationship between material, process and artistic intent within contemporary artistic practice.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Artistic practice is inherently exploratory, as artists continuously seek new forms of expression through conceptual ideas, techniques and materials. This pursuit parallels scientific inquiry, where material exploration is directed toward understanding the physical and performative properties of materials. However, unlike scientific approaches that prioritise functionality, artistic exploration also engages with the symbolic, indexical and iconic dimensions of materials, making them integral to meaning making within creative works (Gartler, 2019). The process of discovering, reinterpreting and repurposing materials in art extends beyond aesthetic concerns, engaging with broader cultural and historical narratives that shape artistic production.

Printmaking, as one of the oldest and most significant artistic disciplines, has long been defined by the relationship between the matrix and the printed image. Traditional printmaking processes involve transferring images from a matrix (printing surface) onto paper, fabric, or other substrates through methods such as relief, intaglio, lithography and screen printing (Griffiths, 2016). In relief printing, such as woodcut, the image is carved onto a wooden matrix, the raised surface is inked and the image is transferred onto paper. In contrast, intaglio processes such as engraving and etching utilise metal plates (e.g., copper or zinc) with incised lines that hold ink, which is then transferred onto paper under pressure (Gascoigne, 2004).

While this traditional matrix has been widely explored, contemporary printmakers continue to experiment with alternative materials, seeking innovations that enhance both technical and aesthetic dimensions. This shift has led to growing interest in material experimentation, where artists explore how unconventional or repurposed materials can reshape printmaking processes, surface qualities and expressive outcomes.

One of the emerging directions in material exploration is the use of natural fiber waste composites, which have gained recognition in industrial and scientific fields for their potential as lightweight, durable materials (Pickering et al., 2016). The global market for natural fiber composites (NFCs) is projected to reach USD 8.5 billion by