



Determination of Kendi's Provenance Through the Panofsky Approach and Combination of Handheld Raman Spectroscopy, X-Ray Fluorescence

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ABSTRACT

This study focuses on ceramic artifacts, specifically Kendi I and Kendi II, housed in the Museum of Asian Art (MoAA) at Universiti Malaya. The artifacts exhibit similarities that complicate their originality, authenticity, age, and provenance assessments. To address this, the research integrates both art historical analysis and scientific material characterization. Employing Panofsky's approach, the study analyzes ceramic types and decorative elements—colors, patterns, and shapes—reflecting the expected dynasty's reign. Concurrently, modern scientific techniques, including portable X-Ray Fluorescence (XRF) and handheld Raman Spectroscopy, are used to identify the chemical compositions (silica, alumina, and various fluxing agents) and mineralogical phases (quartz, mullite, anatase, albite). Raman peaks indicative of quartz and albite, along with XRF ratios aligning with known Ming Jingdezhen compositions, support the findings. The combined data from both analytical methods suggest that Kendi I likely originated from Jingdezhen during the Ming Dynasty, with Kendi II potentially having the same origin. The robust evidence from Panofsky's approach and material characterization helps clarify ambiguities regarding the artifacts' originality.