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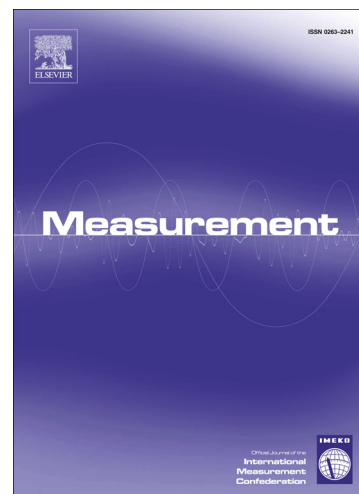
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# Integrated Scientific Investigations On Constitutive Materials From Me-taw-ya Temple, Pagán Valley, Burma (Myanmar)

Maria Letizia Amadori<sup>1</sup>, Valentina Raspugli<sup>1</sup>, Valeria Comite<sup>2</sup>, Paola Fermo<sup>2</sup>, Francesco Maria Mini<sup>1</sup>, Mauro La Russa<sup>3</sup>, Yoshifumi Maekawa<sup>4</sup>

<sup>1</sup>*Department of Pure and Applied Sciences, University of Urbino, Urbino (Italy)*

<sup>2</sup>*Department of Chemistry, University of Milan, Milan (Italy)*

<sup>3</sup>*Department of Biology, Ecology and Earth Sciences, University of Calabria, Rende, Italy*

<sup>4</sup>*Tokyo National Research Institute for Cultural Properties, Tokyo (Japan)*

**Abstract** - Diagnostic research was carried out to acquire information on Me-taw-ya temple, Pagán archaeological area, Burma (Myanmar). Throughout the centuries the temple was severely damaged by a series of strong earthquakes, the most recent one taking place in 2016. Our principle aim was to acquire information on the building's constituting materials (i.e. bricks, mortars and stuccoes) to determine how the temple was constructed, an essential tool for the development of conservation/restoration projects in compliance with international guidelines and standards.

The archaeometric study used selected samples to undertake an integrated application of preliminary in situ non-invasive ED-XRF investigations and micro invasive analyses. Optical microscopy observations, FT-IR, XRD and TG analyses were performed to identify the mineralogical and chemical composition of materials. Samples were categorized using principal component analysis (PCA). Hierarchical cluster analysis (HCA) were also performed on EDXRF chemical compositional data.

Results have delineated a series of considerations linking the geographical origin of the constituting materials to local sources as well as clarifying their formulation and use in the construction of Me-taw-ya temple. Results were used to identify compatible materials for conservation treatments.

**Keywords:** Keywords: Pagán temple, Construction materials, Provenance; Statistical treatment

## 1. INTRODUCTION

Pagán, also known as Bagan, is an ancient city located in the Mandalay Region of Burma. Renowned for being one of Asian's most important Theravada Buddhist sites, Pagán became the capital city of its Empire between 1044 and 1287. The Pagán Empire soon became an influential political, economic and cultural centre and saw the building of over 10,000 Buddhist temples, pagodas, monasteries and

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