

# COLOURS REVEALED – POLYCHROMY OF ROMAN MONUMENTS IN THE DANUBIAN PROVINCES (POLYCHROMON)

PRINCIPAL INVESTIGATORS: GABRIELLE KREMER<sup>1</sup>, ROBERT LINKE<sup>2</sup>, GEORG PLATTNER<sup>3</sup>, EDUARD POLLHAMMER<sup>4</sup>  
 STAFF MEMBERS: MARINA BRZAKOVIC<sup>4</sup>, ROBERT KRICKL<sup>1</sup>, NIRVANA SILNOVIC<sup>1</sup>

1. AUSTRIAN ARCHAEOLOGICAL INSTITUTE, AUSTRIAN ACADEMY OF SCIENCES, 2. FEDERAL MONUMENTS AUTHORITY AUSTRIA (BDA),  
 3. KUNSTHISTORISCHES MUSEUM VIENNA, 4. ARCHAEOLOGICAL MUSEUM CARNUNTINUM

The principal aim of the project PolychroMon (funded by ÖAW/Heritage Science Austria, 2021-2025) is to determine the original appearance, i.e. the presence of polychromy, of the Roman stone monuments. The artefacts under investigation are primarily cult, votive, funeral and architectural monuments from Carnuntum, the Vienna Basin and the Leitha area. For this purpose, interdisciplinary cooperation between the Austrian Academy of Sciences, the Museum Carnuntinum (MC), the Kunsthistorisches Museum Vienna (KHM) and the Federal Monuments Authority Austria (BDA) has been established. The use of innovative technologies enables to identify and analyze the traces of original colouring, and it further allows systematic documentation and a comprehensive scientific evaluation of the examined monuments.

## Overview of the progress

As the first step in this direction, the project has focused on the stone monuments from the rich collection of Museum Carnuntinum (cf. examples in the figures). Nearly two hundred monuments have been selected and examined so far. Both monuments with visible traces of polychromy, as well as those where original colouring is no longer visible to the naked eye, have been selected for investigation. All of these monuments are recorded in the database specifically created for the PolychroMon project. It contains information on each artefact (e.g., provenance, size, inventory number, links to the relevant online databases, etc.), as well as data pertaining to the specific conducted investigations. The range of objects studied includes all monument types: besides the cult statues, reliefs and votive altars, one focus in the first year of the project was on the architectural elements.

In the first step, investigations focused mainly on Multispectral Imaging (MSI), with a current number of more than 5000 files produced so far. This completely noninvasive technique yields information on pigment phases and their distribution as well as on modern, undocumented conservation and restoration measures. Based on these first results, in depth information on pigment layering was gained by microinvasive sampling for Light (LM) and Scanning Electron Microscopy with Energy Dispersive X-Ray Analysis (SEM-EDX). 3D models of selected objects were produced from recorded photogrammetric Structure from Motion (SfM) data. The results confirm remnants of former polychromy on the majority of investigated objects that were mainly produced from local Miocene age “Leitha-Limestone”. So far, the findings agree with the expected palette of inorganic Roman pigments known for that purpose: Calcium Carbonate White, Carbon Black, Egyptian Blue, Green Earth, Yellow and Red Ochre and Red Lead.

## The Mithras cult and its colours

Special attention is given to the monuments of the Mithras cult. The project is the first-ever endeavor to systematically tackle the polychromy of Mithraic monuments on such a broad scale. So far, thirty-four monuments (mainly reliefs, altars, and statues) have been examined. Preliminary results show the extensive presence of colours, as evidenced elsewhere in the Empire. The palette includes white, yellow, orange, red, violet, green, blue and black colour. Moreover, the investigation seems to confirm that the specific colour scheme was used for the Mithraic monuments: Mithras' clothes are usually painted red while the inside of his billowing mantle is painted blue; the bull is white, and Cautes' and Cautopates' clothes are painted in light and dark red clothes, respectively. Similar to the iconography, there seems to have existed a particular colour template shared among the various Mithraic communities. This further indicates that the colour was an integrative part of the iconography and it carried a particular meaning. The next step is to examine the ways in which colour helped convey meanings in relation to specific religious ideas and ritual practices.

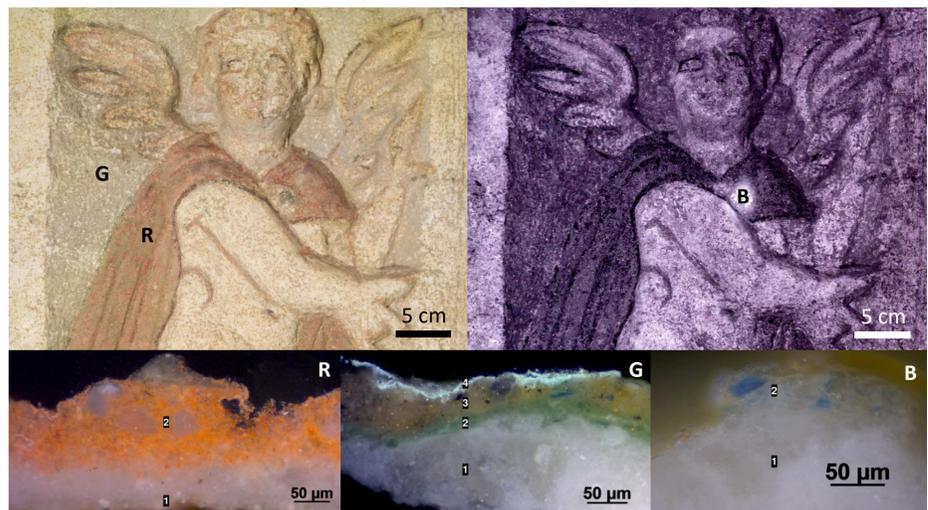
## Challenges encountered

One of the major challenges in detecting colour remains so far lies in the conservation status of the artefacts themselves. The majority of the monuments have been subjected to thorough cleaning, which resulted in the erasure of pigment traces. Besides cleaning, various other factors contributed to the scarce preservation of pigments: previous conservation and restoration undertakings, excavation and storage circumstances, etc. In order to establish the impact of the artefact's previous history on its polychromy, museum documentation is being investigated and important information is recorded when available.

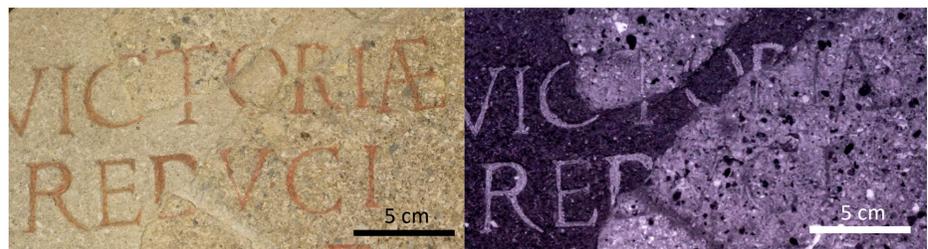
## Project goals

Despite the challenges, the project remains positive towards its final goal: to cross archaeological and chemical data and to combine scientific and cultural-historical questions in order to open up new fields of research and its application for monument conservation, museology and knowledge transfer.

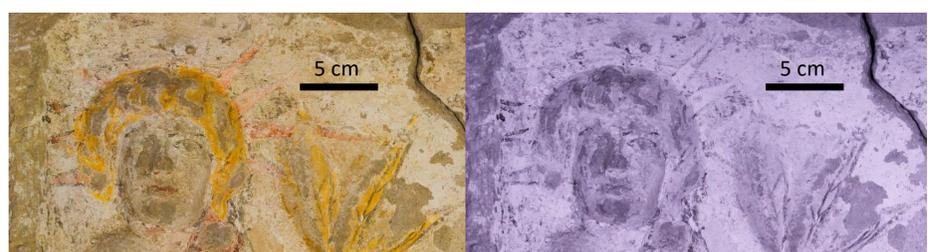
<https://www.oeaw.ac.at/oeai/forschung/altertumswissenschaften/antike-religion/polychromon>



Detail of the sarcophagus of Herennia Rufina (Inv. CAR-S-1845) in visible light (top left) and infrared luminescence image (top right), indicating large areas painted with Red Ochre (R), Green Earth (G) and Egyptian Blue (B). Light microscopic images (below) confirm the phase identification and provide information on the layering (© R. Krickl, R. Linke).



Detail of a cult inscription for Victoria Redux (Inv. I 63/76, 68/76) in visible light (left) and infrared luminescence image (right), illustrating amendment and retouching with modern pigments (© R. Krickl).



Detail of a Mithraic tauroctony relief from Carnuntum (Inv. 3887) in visible (left) and infrared reflected light (right), showing a depiction of Sol, as indicated by protruding rays only provided by painting (and not by sculpturing) and blond hair painted with Yellow Ochre (© R. Krickl).