

# From consecrated image to museum object: Studying materials, provenance, and conservation treatments for a Himalayan composite bodhisattva statuette

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The Domaine de Chaalis (Institut de France) holds a consecrated *Bodhisattva* statuette, dated to the 15th–18th centuries, with well-preserved ritual materials and traces of possible burial and later museum care.

The study and conservation treatment were carried out at *Centre de Recherche et de Restauration des Musées de France* (C2RMF), as part of a Master's thesis in metal conservation at Paris 1 Panthéon-Sorbonne University.

The project combined materials analysis, provenance research and conservation decision-making to define a treatment strategy compatible with the object's ritual integrity and long-term museum display.

How can material evidence inform provenance research and define cleaning and treatment thresholds for a consecrated object whose cultural values are embedded in its material layers?

## Material and technical study

Art-historical and ethnographic research was combined with technical examination and scientific analysis to investigate the object's materials, fabrication, stratigraphy, and ritual use:

- **PIXE analysis with the New AGLAE accelerator** characterized the substrate as a copper-rich alloy (92–98% Cu; 1–6% Sn) and confirmed mercury-amalgam gilding.
- **Radiography and endoscopy** documented a hollow cast made by the direct lost-wax process, pre-casting wax-to-wax assembly, mechanical and metallurgical joins, and sealed consecration contents.
- The tenons supporting the book and sword were cast integrally with the figure, ruling out later replacement and confirming that the hybrid Maitreya–Mañjuśrī iconography is original.*
- **Raman spectroscopy** identified turquoise and amethyst inlays and the pigments: carbon black, azurite/malachite, cinnabar with minor montroydite, and red lead.
- **Optical and 3D digital microscopy** documented fabrication techniques (chased decoration and filling residues in the gem settings), materials associated with ritual use (silk textile remains and neck residues interpreted as ritual gold paint or *cold gilding*), silt embedded in the polychromy, and possible paper in the book attribute.
- **UV examination and solubility tests** differentiated a brown layer - interpreted as a proteinaceous libation residue - from a later beeswax coating.



Anonymous, Himalayan region, *Bodhisattva*, 15th–18th centuries, Gilded copper alloy, inlays, polychromy, textile and organic remains, 29 × 14.3 × 5.6 cm, Domaine de Chaalis – Institut de France, Fondation Jacquemart-André ©C2RMF/A. Komenda,

## Material history and provenance

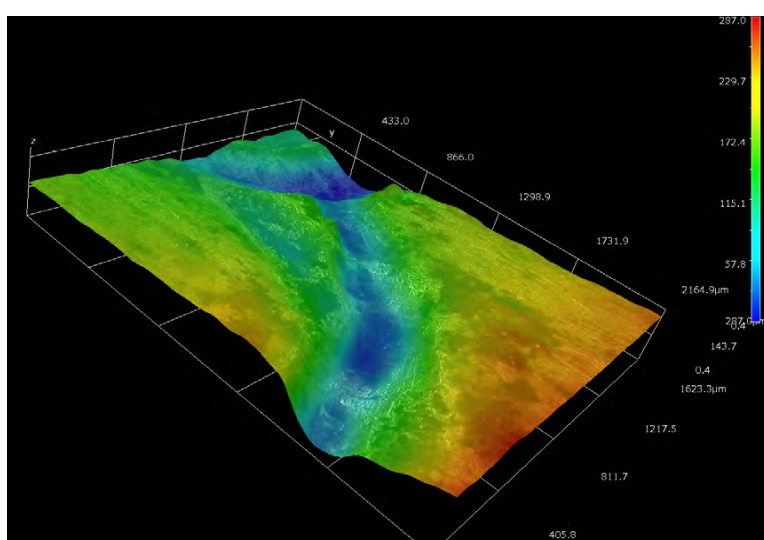
- **Manufacture and ritual use:** Stylistic, technological and iconographic evidence is consistent with production within **Newar metalworking traditions**, probably for **Tibetan Tantric Buddhist worship**.
- **Consecration and traces of devotional practice:** The sealed base plate and internal consecration contents, engraved mandala, ritual polychromy, residues interpreted as cold-applied gilding, brown layer interpreted as a proteinaceous libation residue, and silk remains.
- **Soil contact or burial:** Silt embedded in the polychromy and textile fibers, together with corrosion morphologies comparable to those found on archaeological copper alloys, support this hypothesis.
- **Collection care into the Domaine de Chaalis:** A later beeswax maintenance film and mechanical repairs point to early 20th-century collection care into the Domaine de Chaalis and Nélie Jacquemart-André's collection.



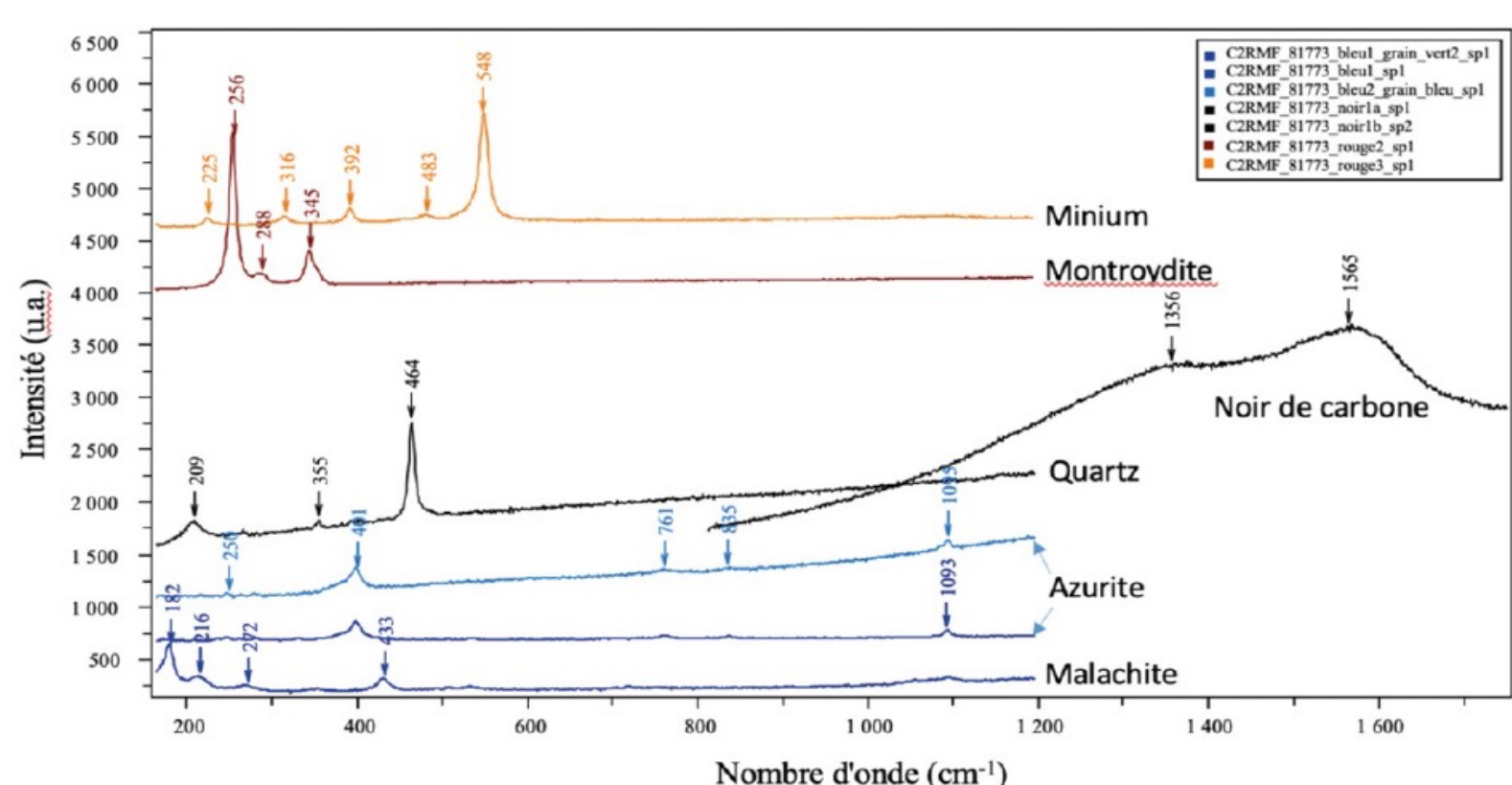
X-radiograph of the statuette showing the hollow structure, casting porosity, and assembly systems. ©C2RMF/E. Lambert.



PIXE elemental analysis using the New AGLAE particle accelerator. Analyses: Q. Lemasson, C2RMF. ©C2RMF/A. Lionni.



3D topographic recording of chased decoration on the throne terrace; 3D digital microscopy. ©C2RMF/B. Massiot and A. Lionni.



Raman spectroscopy of ritual pigments and gemstones, carried out with a 633 nm laser and x50 objective. Analyses: Y. Coquinot, C2RMF. ©C2RMF/Y. Coquinot.

## Conservation treatment

A minimum-intervention approach assessed each layer according to condition, ritual significance, evidential value and legibility for display.

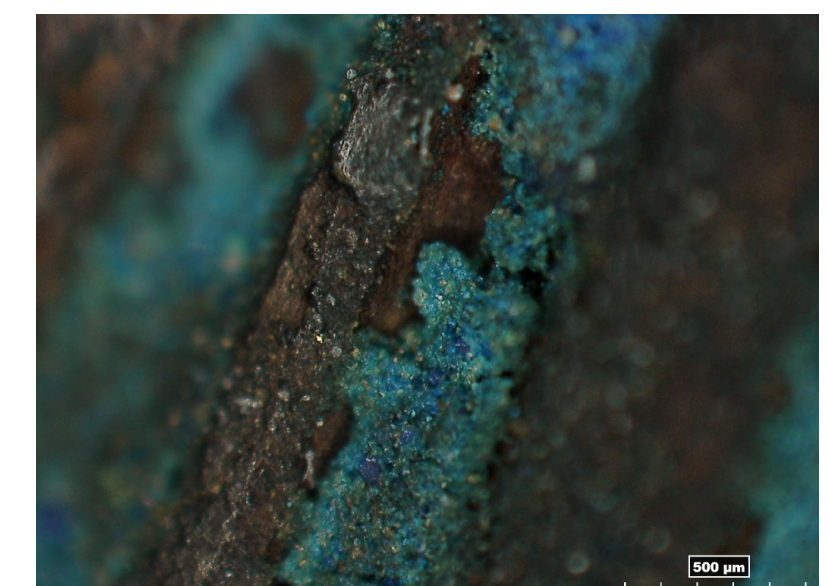
- **Preserved:** Libation residue, ritual polychromy, ritual gold paint, silk, plant fibers, possible paper, stable corrosion products, most contextual silt and the existing deformation of the book attribute. The sealed base was not opened and its contents were not sampled.
- **Stabilized and consolidated:** Base-plate lacunae; loose attributes; active corrosion; friable polychromy.
- **Selectively reduced and removed:** beeswax coating and associated metal soaps; selected silt deposits obscuring the polychromy and throne medallions; selected copper corrosion products around the gem settings.



Selective cleaning while preserving residual polychromy, visible light, 3D digital microscopy and general view. ©C2RMF/B. Massiot, A. Lionni.

## Polychromy consolidation

- **Mock-ups:** Artificially aged copper-alloy coupons with a weakly bound azurite–hide glue layer.
- **Variables:** JunFunori® and sturgeon glue at 0.10% and 0.15% (w/w), applied by ultrasonic nebulization.
- **Assessment:** Low-tack tape peel tests, instrumental colorimetry and gloss measurements.
- **Selected:** 0.10% (w/w) sturgeon glue provided the best balance between cohesion and optical stability after three test applications.
- **Object treatment:** Three applications of the selected formulation by ultrasonic nebulization, with local capillary infiltration beneath lifted flakes



Friable blue-green polychromy with powdering and local flaking; visible light, 3D digital microscopy and Mock-ups reproducing a weakly bound azurite layer on copper-alloy coupons. ©C2RMF/B. Massiot, A. Lionni.

## DISCUSSION

- Further research could include comparative study of silt deposits and corrosion-product morphologies to refine hypotheses on the object's provenance and past environmental conditions.
- Because the statuette's precise provenance remains unresolved, no specific source community could be identified for consultation during this project. Future dialogue with relevant Himalayan Buddhist, Newar, and/or Tibetan communities should be considered once appropriate communities of care have been identified. Bringing material evidence and community knowledge together would support a more culturally situated approach to conservation, interpretation, and display.

ACKNOWLEDGMENTS AND PARTNER INSTITUTIONS

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This poster presents the technical study and conservation of a consecrated gilded copper-alloy bodhisattva from the Domaine de Chaalis collections (Institut de France). The project was undertaken in 2023–24 by the Department of Conservation at the Centre de Recherche et de Restauration des Musées de France (C2RMF) in close collaboration with the C2RMF Research Laboratory. The conservation project combined materials analysis and interdisciplinary consultation to define treatment options, with a specific focus on consolidating fragile ritual polychrome while maintaining an ethical principle of minimum intervention. Stylistic, technological, and iconographic examination suggests it was manufactured by the Newar people for Tibetan Buddhist worship and can be dated broadly to the 15th to 18th centuries. The object is both an image of worship and a museum artwork—at once cult object and cultural artifact—whose successive lives are materially recorded on its surface. Addressing this dual status required a value-based approach that treated the materials as evidence of distinct temporalities—ritual use in the Himalayas and later display, care, and interpretation in a European collection. Interdisciplinary input from curators, ethnologists, art historians, and C2RMF scientists guided the examination and decision-making. Technical study combined visible and ultraviolet (UV) light examination, optical and 3D digital microscopy, radiography, endoscopy, Raman spectroscopy for pigments and gemstones, and particle-induced X-ray emission with the New AGLAE accelerator. The object is a lost-wax copper-alloy cast with mercury gilding, chased decoration, and inlays (turquoise, amethyst). Materials associated with cult practice include polychromies—identified as carbon black, azurite/malachite, cinnabar, and red lead—areas of ritual cold gilding, a brown proteinaceous libation film, a plain-weave silk textile, and a sealed consecration charge documented endoscopically (vegetal fibers, seeds). Exogenous silt deposits across the surface and corrosion indicate burial or soil contact, while a later beeswax maintenance film and mechanical repairs point to early 20th-century collection care and subsequent musealization. The project's ethical axis was to preserve cult-related and use-related evidence while meeting the museum's needs. Interventions therefore prioritized minimal intervention while focusing on material and iconographic legibility. Cult residues, stable corrosion, and contextual

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sediments were left untouched and the statuette was not opened. However, the beeswax film, some localized silt obscuring the polychromy, and corrosion around the gem settings were removed. An experimental study was undertaken to select a consolidant for the friable matte polychromy on the copper-alloy surface. Mock-ups replicating a weakly bound azurite layer on copper-alloy coupons were prepared. JunFunori and sturgeon glue at 0.10% and 0.15% (w/w) applied by fine nebulization in successive passes, were compared. Color and gloss changes were assessed with instrumental colorimetry and gloss measurements. The monitoring was conducted with Clotilde Boust (C2RMF Imaging Group) to quantify visual change. Cohesion criteria were evaluated by workshop peeling tests. Sturgeon glue at 0.10% in two passes provided the best balance. The principal outcome is methodological: a materials-led, interdisciplinary workflow can mediate between the past (ritual manufacture and use), the present (collection history and museum display), and the future (long-term stability and interpretability) by treating each material layer as a time-stamped value.