Technological examination of copper bolts from the Delftse 1 (1873) site by means of spatially resolved neutron texture measurements

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I. Introduction

The current study involves the detailed analysis of copper bolts from two different archaeological sites, Delftse 1 (1873) and Delftse 2 (1874), using neutron texture measurements. The aim is to understand the technological and manufacturing processes of these artifacts, which are important for reconstructing the historical context of the Late Roman period in the Netherlands.

II. Material and Methods

A. Site Description

Delftse 1 and Delftse 2 are Late Roman archaeological sites located in the Netherlands. The site of Delftse 1 was discovered in 1873, and it is known for its well-preserved remains of Roman buildings, including a temple and a bath complex. Delftse 2, discovered in 1874, is a smaller site with fewer artifacts but still provides valuable insights into the Roman presence in the area.

B. Sample Collection

Copper bolts were collected from both sites. These bolts are considered to be part of architectural elements, likely used in the construction of the buildings. The bolts were carefully excavated and preserved, ensuring their integrity for further analysis.

C. Neutron Texture Measurements

Neutron texture measurements were performed on small samples, using a neutron beam at the Nijmegen Laboratory for Neutron and Inelastic X-ray Scattering (NINL). The measurements allowed for the examination of the texture and microstructure of the copper bolts, providing insights into their fabrication processes.

III. Results and Discussion

A. Textural Analysis

The neutron texture measurements revealed a high degree of homogeneity in the microstructure of the copper bolts. This suggests that they were produced using advanced technologies, possibly involving the use of specialized equipment.

B. Manufacturing Processes

The analysis of the copper bolts' texture indicates that they were produced using a hot forging process. This method involves shaping the metal under high pressure and high temperature, which is a common technique in the production of copper artifacts during the Roman period.

IV. Conclusion

The technological examination of the copper bolts from the Delftse 1 and Delftse 2 sites has provided valuable insights into the manufacturing processes of these artifacts. The neutron texture measurements have confirmed the high quality of the copper, reflecting the advanced technological capabilities of the Roman period.

References