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## The metallurgical texture of prehistoric gold artefacts studied by neutron diffraction

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The metallurgical texture of archaeological metal objects can give clues about the manufacture of the pieces. Texture analysis with neutrons has therefore been used to study objects from the Bronze Age site of Bernstorf in Bavaria, showing that these objects exhibit a very pure cube texture, which is typical for rolled and annealed fcc metals, a method of production hardly imaginable for the Bronze Age. The manner in which the Bernstorf gold foils were produced is thus of some importance for the question of their authenticity. Experiments with gold reference specimens confirmed the cube texture in rolled and annealed specimens and rule out plain hammering. But the question remains whether other manners of making gold foils could also give rise to a cube texture. To clarify this matter, we are presently studying the texture of Bronze Age gold objects from the Bulleheimer Berg and from Hammersdorf, two other Bronze Age sites in Bavaria. These experiments are expected to reveal whether the cube texture is unique for the Bernstorf finds or whether it is more common in ancient gold objects. We are also performing experiments on reference specimens produced under various conditions by hammering and other methods that might have been used by Bronze age goldsmiths. Even if it should be impossible to reach a final conclusion on the Bernstorf finds, the results are an important contribution to the knowledge on the texture of gold objects made by handicraft techniques.

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