

Russian archaeologists find oldest crucible steel weapon in East Europe

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Crucible steel sabre

Sometimes old friends give you a surprise. Russian archaeologists were conducting a routine examination of an old sabre unearthed seven years ago in Yaroslavl, when it turned out to be oldest crucible steel weapon in

East Europe.

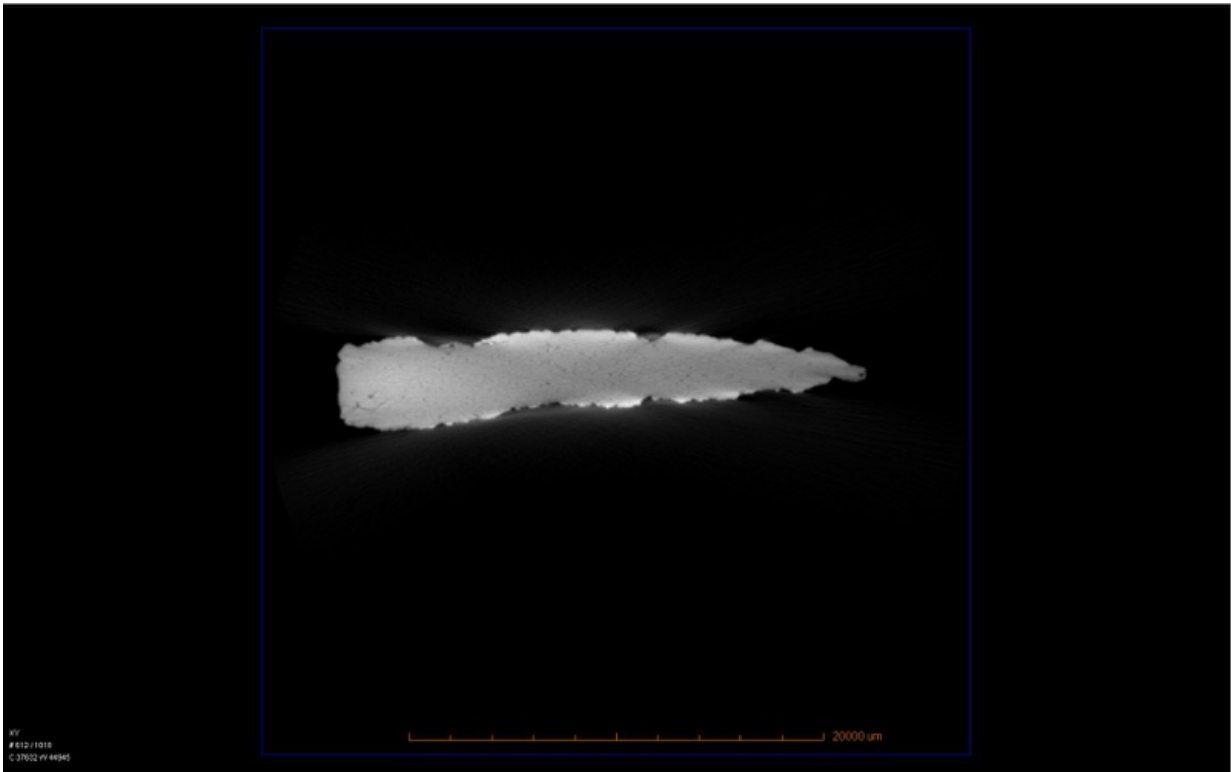
"It was a highly unexpected and exciting find," said Dr. Asya Engovatova from the RAS Institute of Archaeology, who lead the research. "We were analysing a fragment of a sabre that had already been in the Yaroslavl State Museum over seven years – and discovered it was a unique artifact."

The sabre was unearthed by Engovatova and her colleagues in 2007 at an excavation site in the historic centre of the city of Yaroslavl, alongside the Dormition Cathedral. The site is a mass grave of city defenders and civilians slaughtered by Batu Khan's invaders on a single day 1238.

"The site contains comprehensive evidence of the atrocity committed that day. We found numerous skeletons of murdered women and children, many household objects like dishes, jewelery, many weapons items - and this sabre," Engovatova said.

The metallographic methods used in the analysis revealed that the sword was made from crucible steel. The technology used to produce steel of this kind was first perfected in India, in the 1 A.D. Artifacts crafted from such steel later begin to turn up in Central Asia. European sword makers appear to have known nothing of this technology. The techniques for making crucible steel were later lost and European steel makers reinvented it only at the end of the 18th century.

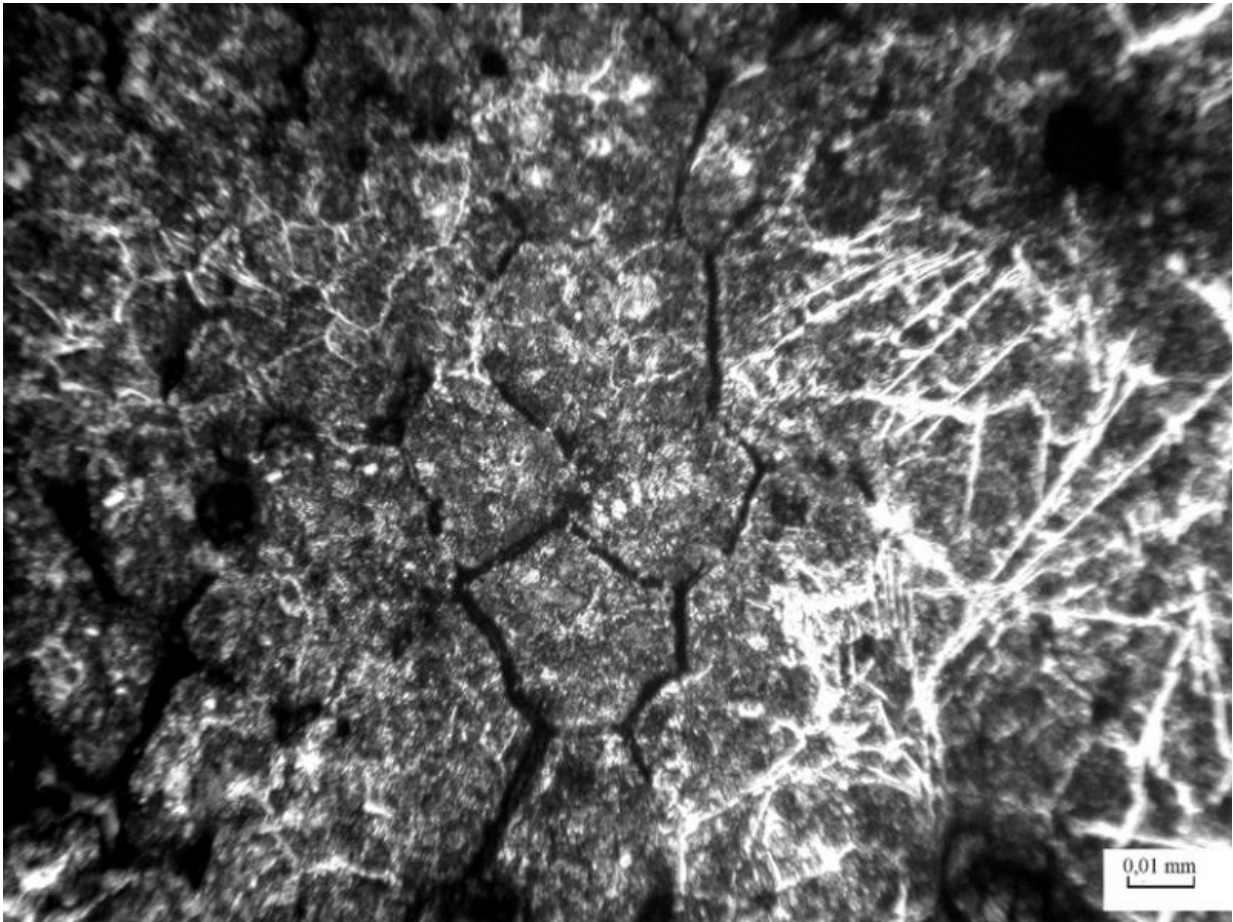
In the Middle Ages and thereafter, crucible steel was very expensive. It produces bladed weapons more exactly than any other material, conferring a combination of great strength and the ability to maintain sharpness throughout the length of the blade.



X-ray microtomography image

Scientists suggest that the "Yaroslavl Sabre" could have belonged to a very wealthy warrior from Batu Khan's army.

Alan Williams, a well-known British expert on the ancient technologies of bladed weapons, said that Central Asian crucible steel was used only for blades of German swords branded ULFBERHT, dating from the eighth and ninth centuries, and never for forging all-steel blades.



Microphotography image of microcracks in metal

The intense interest surrounds not only the production methods for the blade, but how it came to be buried. The sabre was broken, its handle lost, and its blade bent. Analysis shows micro-cracks present in the blade, usually an indication that an object has been burned. Most likely, the weapon was subjected to bending as ritual damage, for which the blade had to have been heated to a high temperature.

Currently, the sabre has been restored and returned to the Yaroslavl Museum, together with the entire collection of archaeological treasures found at the excavations.



X-ray microtomography image, trace of welding

Provided by Russian Academy of Sciences

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