

## عنوان مقاله:

(Preliminary Metallurgical Investigation of Copper-Based Artifacts at Tepe Sagzabad in Qazvin Plain, Iran (۱۵۰۰-۸۰۰ BC

## محل انتشار:

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## خلاصه مقاله:

Tepe Sagzabad, a site situated on the Qazvin Plain of north-central Iran, was excavated from ۱۹۷۰ to ۱۹۹۸ by the Institute of Archaeology of Tehran University. Recent excavations by H. Tala'i (۱۹۹۷-۱۹۹۹) yielded some metal artifacts dating to the Early Iron Age. Ten of these copper-based samples were investigated using inductively coupled plasma optical emissionspectroscopy (ICP-OES), scanning electron microscopy combined with energy dispersive X-ray spectroscopy (SEMEDX) and optical microscopy (OM). The results of these analyses showed that the metal objects at Tepe Sagzabad are made of different copper alloys, including: pure copper, copper-arsenic and copper-tin. In addition, multiple procedures, including hot-working, cold-working, and annealing were used as manufacturing techniques. The copper-based objects from Tepe Sagzabad provide evidence for the continued use of pure copper and arsenical copper alongside tin bronzes on the Iranian Plateau during the Early Iron Age.

## کلمات کلیدی:

Sagzabad, Qazvin Plain, Iranian Plateau, Archaeometallurgy, Copper alloys, Iron Age

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