ABSTRACT SUBMISSION

Revealing Final Bronze to Early Iron Age metallurgical technologies at Kimirek-kum-1, Uzbekistan

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Abstract

While compositional analyses of metal objects have contributed to understanding the metal economy in prehistoric Central Asia, the complexity of social and economic interactions poses challenges to characterize archaeological cultures solely based on metal composition. Analysis of metallurgical technologies can provide another perspective to explore the cultural dynamics in local and regional settings. Recent excavations and surveys at Kimirek-kum-1 (KK1) in southern Uzbekistan unearthed metal production debris (i.e., slags and crucible fragments) and considerable amounts of metal artifacts, including copper-based alloys, lead, silver, and gold. Metallurgical studies on KK1 materials may thus shed new light on technological developments of metallurgy in prehistoric southern Central Asia, and provide new evidence to elucidate regional changes during the Final Bronze to Early Iron Age (FBA-EIA) transition. We analyzed metallurgical slags and metal artifacts from KK1 using portable X-ray Florescence (pXRF), optical microscopy, and Scanning Electron Microscopy-Energy Dispersive X-Ray Spectroscopy (SEM-EDS). Based on morphology, microstructure, and chemical composition of samples, we investigated the production technologies of copper-based alloys at the site. We place special emphases on the processes of metal production at KK1, and explore the inter- and intra-cultural connections in the FBA-EIA Central Asia.

Keywords

metallurgy, technology, Central Asia, metal, material analysis

Session

7. Characterizing culture ?

Workshop

A16297LR - Characterizing culture in Central Asia's late bronze & early iron ages: Merging new analytical data with regional paradigms

Type of paper

Oral presentation