Goldschmidt 2026 Abstract
https://doi.org/10.46427/gold2026.33327

Sr-Nd isotopic composition of Late Bronze Age ceramics from the Czech Republic, Central Europe

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In 2005, a large Late Bronze Age settlement was discovered in southern Bohemia near Březnice u Bechyně. With more than 36,000 ceramic fragments, the assemblage from Březnice represents the largest collection of Late Bronze Age pottery in southern Bohemia. The total weight of ceramics recovered is 545 kg.

Several types of ceramic material were identified at the site, including vessels of various shapes, fragments of daub, clay weights, and clay balls – spherical to slightly oval objects made of clay. Some specimens are unfired, while others are indicative of weak to moderate firing, and several pieces display strong surface over-firing. Such clay balls are not typical finds in Late Bronze Age settlements and their function remains unclear. Two main interpretations have been proposed: (1) they represent potters' clay prepared for ceramic production, or (2) they were used as material for repairing furnaces or building plasters.

At the Czech Geological Survey, we determined Sr–Nd isotopic compositions of ceramic materials from the site and two distinct groups of pottery were identified. The first group is characterized by lower $^{87}Sr/^{86}Sr$ ratios around 0.7201 and εNd values of approximately −10.2. The second group has more radiogenic $^{87}Sr/^{86}Sr$ ratios ranging from 0.7277 to 0.7315 and εNd values between −9.7 and −12.5. Daub samples exhibit a different isotopic signature, with $^{87}Sr/^{86}Sr$ ratios of 0.7363–0.7375 and εNd values from −11.5 to −11.7.

The isotopic composition of the clay balls corresponds closely to that of the first pottery group, with $^{87}Sr/^{86}Sr$ ratios of 0.7198–0.7204 and εNd values between −10.4 and −10.6. Based on these isotopic data, we suggest that clay balls represent prepared batches of potters' clay intended for ceramic production.