



# Insights into the raw materials and technology used to produce Copper Age ceramics in the Southern Carpathians (Romania)

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**Abstract** The Copper Age Coţofeni culture occupied a large territory which covers present day W Romania, NE Serbia, and NW Bulgaria. The Coţofeni people lived in settlements located on hill slopes and river terraces, as well as in caves. Their hand-modeled ceramic pottery is richly ornamented by incisions, incrustations, and “lentil bean” appliqués. Potsherds found in the “Peştera Mare de la Cerişor” (i.e., the “Great Cave of Cerişor”) located in Paleozoic crystalline limestones and dolomites (Southern Carpathians, Romania) were studied in terms of mineralogy and petrography by OM, XRD, and EMPA. The sherds consist of an Fe-rich illitic matrix embedding quartz, K-feldspar, muscovite, plagioclase, biotite, chlorite, various heavy minerals, metamorphic, magmatic and sedimentary lithoclasts, as well as soil concretions and chamotte. Within a temperature interval, spanning between ~800 and ~900 °C, three firing groups were roughly separated, based on the optical characteristics of the matrix and the intensity of the illite/muscovite diffraction peaks. Quaternary and Miocene rocks from the area were analyzed by XRD in order to determine the provenance of the raw materials.

**Keywords** Archaeometry · Ceramics · Copper Age · OM · XRD · EMPA

## Introduction

Ceramic sherds are ubiquitous remnants of artifacts found at archeological sites. Made for the most part from mudstone (“clay”) mixed in some cases with mineral temper, ancient ceramic materials can be considered artificial rocks (Maggetti 1982) formed by anthropogenic metamorphism (Grapes 2011). Ceramic sherds carry valuable information about the state of ancient social-economic interactions, and the knowledge of the raw materials and technology. The Copper Age within Romania included cultures which stand out among others for their ceramic pottery: Cucuteni-Tripolye (Ellis 1984; Mantu 1998), Coţofeni (Roman 1976), Boian (Comşa 1974), Petreşti (Niţu 2006), and Gumelniţa (van As et al. 2006). Among them, the Coţofeni pottery is

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