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Science meets archaeology and art history



## BOOK OF ABSTRACTS

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**BYZANTINE AND EARLY OTOMAN GLAZED CERAMICS IN REPUBLIC OF  
MACEDONIA AND TURKEY: CHARACTERIZATION AND COMPARISON**

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In the course of our study on Byzantine heritage, Byzantine ceramics has been studied in collaboration within CNRS, within bilateral Macedonian - French project « *Analyses non-destructives des céramiques anciennes des Balkans* ». Samples of Ottoman origin were later included in the study. Since Byzantine and Ottoman cultural heritage finds, excavated in Republic of Macedonia and Turkey are often of the same or shared origin, in order to facilitate the characterization and comparison of the Byzantine and Ottoman ceramic finds in both countries, a bilateral Macedonian-Turkish project was initiated as regional cooperation between the Republic of Macedonia and Turkey. This study is focused on Byzantine and Ottoman ceramics: a) characterization, technology, firing temperature and possibly provenience b) comparison of the samples c) comparison of Byzantine technology versus Ottoman technology in ceramics making.

Our recent study comprises Byzantine glazed ceramics (13-14<sup>th</sup> century) and Ottoman glazed ceramics (17-19<sup>th</sup> century) excavated in archaeological site of Skopsko Kale, Republic of Macedonia, regarding their mineralogical characterization, firing temperature, technology and possibly provenience. Analyzed Byzantine samples are with floral ornamentation while the Ottoman pottery glazes are mostly plane green, but also in brown, black, white or ochre color. Some of the samples are characterized with underglaze engobe and some have sgraffito slip decoration.

Mineralogical, chemical and manufacturing characterization of the ceramic shreds was performed using several techniques:

1. Infrared spectroscopy: for estimating the firing temperatures of the pottery body
2. Micro-Raman spectroscopy: for assessing of the mineralogical composition of the pottery bodies. This technique was also used to obtain information about the

firing temperature of the glazes and for detection of the pigments used for decoration of the pottery.

3. XRD analyzes: for estimating the mineralogical composition of the ceramic body
4. XRF measurements, for semi-quantitative analyzes of the ceramic bodies.
5. SEM analyzes of 5 of the samples provided some information of the surface topography and major elements present in the pottery body and glazes.

Despite the pronounced time and cultural differences of the two types of analyzed samples, great similarities in the manufacturing of the ceramics were found.