

CERAMIC GLAZES FROM THE EARLY MODERN AGE  
(Materials Science: Examination of the excavated  
Ónod and Muhi ceramic glazes)

Since 3500 B.C. the mankind have been using ceramic glaze covered pottery. Up to now weak effort was done to examine the old ceramic glaze from the materials scientist point of view. Different type of Hungarian old ceramic glaze was chosen for investigation from the 15–16<sup>th</sup> century Ónod and Muhi area, with special interest of the concentration, the structure and color of the ceramic glazes. The pottery was considered as a substrate material. It was aimed to find connection between some hundred years old and the modern ceramic glaze considering the manufacturing process. The old ceramics glaze had two function. The first was to improve the properties of the basic ceramics like water resistance and cleanability. The second was the aesthetic which is usually dominant. This work is searching for answer of the following questions:

- What is the physical basis of the aesthetic?
- What was the raw material of the glaze?
- How did the potter reach the required effects in the ancient time?

The examination of the ceramic glaze was started with visual description. Scanning Electron Microscopy, EDS microprobe and color measurement was used to determine the surface defects (as bubbles and scratch network), chemical composition and the exact color. It was find that copper-oxide and iron-oxide were used coloring the glaze to yellow, green and brown. In the early modern age the temperature of the firing furnace was lower than in our time. It was justified that lead oxide was used to decrease the viscosity and the softening point of the glaze. The thickness of the glaze found to be homogeneous and well fixed. Scientific comparison of the different examination and glazes have given new information about the glazing process and the possibility of the common origin.

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