

Diagnosis of Pigment Materials Affected by Air Pollution and Clay Minerals in Sabil Alkazlar.

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Abstract

In this study, pigment materials in the Sabil Al-Kazlar were studied using XRD, SEM-EDAX, light optical microscope, UV analysis and FTIR in order to determine their mineralogical and chemical composition and to evaluate how these pigments were affected by air pollution and clay minerals. The pigments revealed are golden pigment as gold (Au), black as bone black, and red pigment as cinnabar (HgS). The wooden ceiling collating the rendering layer on which the pigments were applied is composed of anhydrite and gypsum mixed with sand. Lead sulfide was detected in the examined cinnabar red sample which indicates the effect of lead as a pollutant on the deterioration of the wall paintings. Clay minerals detected in the plaster layer on the ceiling in the Sabil are kaolinite and a smectite-illite mixed layer. The detection of halite in all the studied samples indicates the effect of rising ground-water on the studied ceiling. The wall paintings in Sabil Al-Kazlar were created using tempera technique with a rabbit skin glue medium. The artist used the multilayer style using the gesso grosso and the gesso sottile techniques.

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