

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

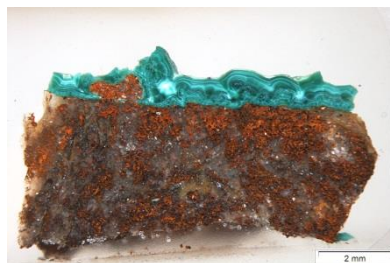
This project aims at expanding our knowledge about pigments, including methods and sources thereof on the territories that today are part of Poland, whereby particular emphasis will be given to the mining and production of malachite, azurite and smalt between the 16th and 18th century. The need to carry out such research arose from the service analysis ordered by various art restorers, museums and private collectors. Today, the more and more sophisticated research methods in the field of analytical chemistry help to obtain series of data that concern the composition of the materials used. However, as it turns out, the development of the chemistry was not followed by the similar development of the corresponding theory and knowledge necessary to correctly interpret the data received. Necessary information is scattered across sparse specialised publications available to the scientists and researchers specialising in selected fields (geologists, mineralogists, archivists, economy historians). The goal of this project is both to disseminate the information collected to the general public, but also to apply advanced chemistry research to pigment provenience studies. Minerals from selected mines as well as the pigments themselves used in the works of art will be tested, leading to the development of a sort of pigment information sheet dedicated to pigments coming from specific deposits.

Pigments shall be characterised according to their element composition, which will be established based on the non-destructive methods conducted with the help of X-ray fluorescence spectrometer (XRF) as well as micro-destructive analysis with scanning electron microscope (SEM) equipped with an energy dispersive spectrometer (EDS). Moreover, an additional isotopic ratio characterisation will be developed with the help of inductively coupled plasma mass spectrometry (ICP-MS). The work will also involve petrographic studies, which help to identify the minerals, phase composition (XRD), which specify crystal structure of a compound and molecular analysis (Raman spectroscopy), specifying bonds used by the atoms to create chemical compound.

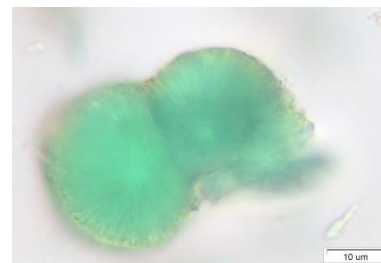
This project will be a truly valuable contribution in merging quests conducted in various fields, such as analytical chemistry and mineralogy, as well as archive and historic research. We will follow the main trade routes and the movements of the pigments. It is well known that Polish lead from Olkusz was exported to many places. Is it possible that the same was happening to malachite, azurite or smalt?



Fot. 1. The green coating on the rock is malachite.



Fot. 2. Cross-section of the rock with secondary coating of malachite.



Fot. 3. Two malachite crystals together. Magnification 1000x.

In today's Poland the territory particularly rich with natural resources is Lower Silesia. Historically, this area was under Czech and German reign. Yet, not many people know that in the past, the core industrial centres were located in Kielce, Radom, Ostrowiec Świętokrzyski or Skarżysko Kamienna, the so called Old Polish Industrial Area. Sigmund's Chapel in Wawel Castle was decorated with the precious metals supplied by Miedzianka mine n. Chęciny, whereas malachite from the very same deposit was used by King Stanislaw August to decorate his rooms. Therefore, undertaking and developing the aforesaid subject matter is not only interesting, but it will also provide research outcomes which may be used as a valuable source of information for further interdisciplinary research that combine exact science and broadly defined historic sites and buildings protection.