

Microscopic techniques to study mineral materials in cultural heritage

**A workshop for the optimal use of polarized light microscopy and SEM
to better understand archaeological and building materials**

October 7 - 11, 2019

jointly organized by the
University of Applied Arts Vienna
and

BDA - Federal Monuments Authority Austria

Venue

University of Applied Arts Vienna, 1010 Wien, Stubenring 3

Organizers and lecturers

Prof. Dr. Johannes Weber, petrographer, University of Applied Arts Vienna/Austria

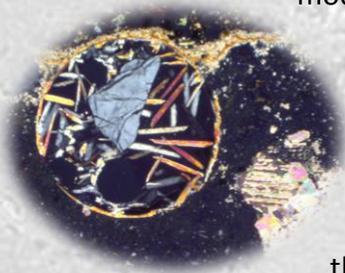
Dr. Farkas Pintér, geologist, BDA Vienna/Austria

Dipl.-Geol. Thomas Köberle, geologist, TU Dresden/Germany

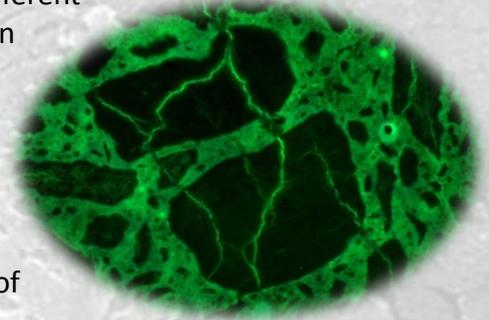
**“MICROSCOPY IS THE MOST EFFECTIVE ANALYTICAL TECHNIQUE FOR GATHERING
INFORMATION ON HISTORIC ARTEFACTS AND BUILDING MATERIALS”**

Background and aim of the Workshop

The analysis of the mineral material of architectural and archaeological objects in the laboratory is frequently a challenging task for conservation scientists, building researchers and archaeologists. It includes the identification and characterization of stones, mortars and ceramics as well as the assessment of their structural and material failures. Within the range of various methods of analysis employed, thin section petrography, especially when combined with SEM, offers a powerful method to gain relevant information on historical and modern building materials. As for most imaging analyses, the success of this approach does not only depend on the quality of the sections, but most of all on the skill of the expert in selecting the most appropriate mode of observation and interpreting the results. Planned as a platform for scientists and experts with a background in mineral artefacts, the five-day workshop is aimed at demonstrating and discussing the potential of light microscopic and SEM techniques in the field of restoration, building research, conservation science and archaeology-archaeometry. The main focus is laid on the thin section analysis of mortars, plasters, concrete, stone and ceramics by applying transmitted and reflective light. Composition, workmanship and degradation will be discussed.



The group will comprise a maximum of 20 participants. Lectures and discussions are in English. They will be jointly held by three conservation scientists with degrees in geology and petrography and a sound background in the use of different microscopic techniques in their fields. Following an introduction on methodology, each type of material will be quickly discussed on a general level before displaying via beamer examples of analysis by microscopy of actual samples. Attendees are invited to forward their wishes to discuss specific topics more in detail.



The venue is located in the main building of the University of Applied Arts Vienna in the heart of the historic city center, a ten minute walk from the Cathedral and other places of interest.

As a special offer, we would like to invite you to select a mineral material of specific interest to you (weathered stone, mortar, ceramic, etc.) and send us a sample along with a short description at the time of registration (but not later than the end of June). We will then produce polished thin sections and examine them together with you by means of polarizing microscopy and SEM! Extra costs for the production of a polished thin section: 60 EUR. – In addition, please bring your own sections with you!

Terms of workshop participation

The 5 day participation amounts to **590 EUR**.

The participation fee includes coffee and snacks during the breaks and digital course materials. Luncheons can be taken in nearby restaurants and cafeterias. Supermarkets are just around the corner.

As side programmes we offer a walking tour through Vienna's historic center with the focus on building stones, mortars and decoration systems and a get-together in a typical Viennese Restaurant. Accompanying guests are welcome to both events!

Informal registration shall be sent not later than **June 30 2019** by e-mail to johannes.weber@uni-ak.ac.at. You will then within short receive a confirmation with details of payment which must be installed **not later than July 31, 2019**. Otherwise the place is going to someone else.

The number of participants is limited, and a 'first come, first serve' policy will be followed according to the date of registration. Should no sufficient number of participants register, the event will be cancelled. In that unlikely case, you will be informed as soon as possible; payments will be fully reimbursed.



Upon request, a few participants can be granted admittance to the course at a reduced fee. Students and participants from low-income countries will be preferred. Applicants should explicitly state their request, add a short CV and inform about their motivation to attend along with their registration.

Program:

Monday, October 7		
	Morning	Welcome Introduction to sample preparation, polarized light microscopy, scanning electron microscopy and other microscopic techniques
	Afternoon	Stone decay under the microscope, consolidants in the pore space Building ceramics
Tuesday, October 8		
	Morning	Gypsum mortars
	Afternoon	Walking tour through Vienna downtown: urban development, building stones and historic renders
	Evening	Common dinner
Wednesday, October 9		
	Morning	Air lime and dolomitic air lime mortars
	Afternoon	Pozzolanic limes Natural Hydraulic Lime
Thursday, October 10		
	Morning	Roman cement
	Afternoon	Historical and modern Portland cement and concrete
Friday, October 11		
	Full day	Microscopy and SEM on participants's samples
Saturday, October 12		<i>Optional program (not yet specified)</i>

