



REPORT

Aleksandar Pačevski

During the period from 21th to 26th November 2010. Aleksandar Pačevski visited Institute of Geosciences, Division of Mineralogy, University of Frankfurt (GUF) in order to enhance major project activities (i) strengthening the international co-operation networking and partnership between the UB-FMG, GUF and GeoZS and setting-up a brain-gain environment, (ii) improving material research standards at the UB-FMG by renewal and upgrade of the facilities.

Special attention has been paid on the Electron Microscopy Techniques that represents the milestone of this project and renewal and upgrade of the facilities of UB-FMG. Thus, Aleksandar Pačevski has utilized his stay at GUF for next purposes:

- 1) **SEM maintenance.** Valuable information and recommendations about maintenance of SEM apparatus has been obtained from Heidi Hofer who is supervisor of the SEM-EDS lab of GUF.
- 2) **Instructions for EMPA-WDS.** As the Wavelength Dispersion Spectrometer (WDS) could be attached on the SEM apparatus of UB-FMG, Aleksandar Pačevski spent most of the time at GUF learning about practical work of Electron Micro-Probe Analysis (EMPA) achieved by WDS. For that purposes, special attention was devoted to the overall laboratory equipment (Fig. 1a), sample holders (Fig. 1b) and procedure of standardization and resolve the problem of the peaks overlapping.
- 3) **Introduction to EBSD technique.** As the Electron Backscattering Diffraction (EBSD) system could be attached on the SEM apparatus of UB-FMG, Aleksandar Pačevski introduced basic principle of this method, necessary equipment, i.e. detector (Fig. 2a), sample holders (Fig. 2b), hardware and software, and practical work of this technique.
- 4) **Introduction to special techniques for sample preparation.** Aleksandar Pačevski has got basic knowledge of two special techniques for sample preparation which are available at GUF. These techniques are based on the usage of two machines, Cross Section Polisher and Argon Ion Slicer, respectively. By the Cross Section Polisher (Fig. 3) the highly smooth sample surface could be achieved and it is mainly used for sample preparation for EBSD analysis, while Argon Ion Slicer (Fig. 4) is used for sample preparation for TEM analysis and by this machine it is possible to get effective sample surface for TEM analysis up to 35000 μm^2 .
- 5) **Additional activity.** Aleksandar Pačevski also visited and introduced the laboratories for polished section preparation and Mössbauer spectroscopy.

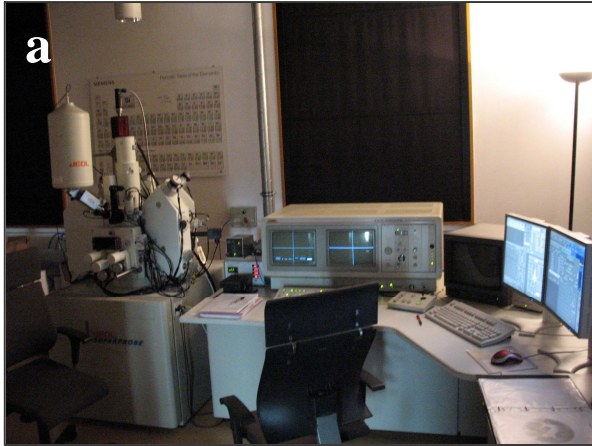


Figure 1. a. Laboratory for EMPA of GUF. **b.** Sample holders for EMPA.

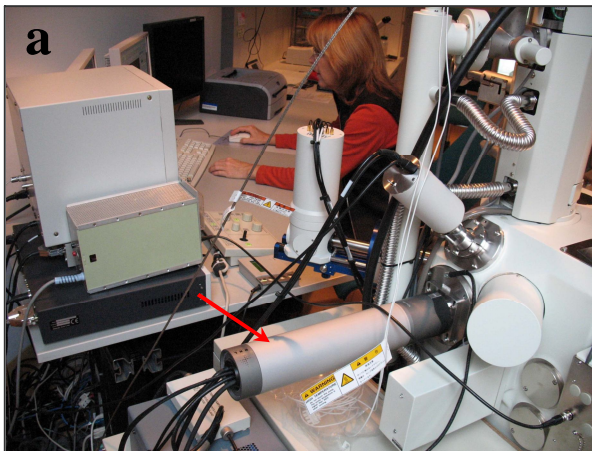


Figure 2. a. EBSD detector attached on the SEM of GUF. **b.** Sample holder for EBSD analysis.

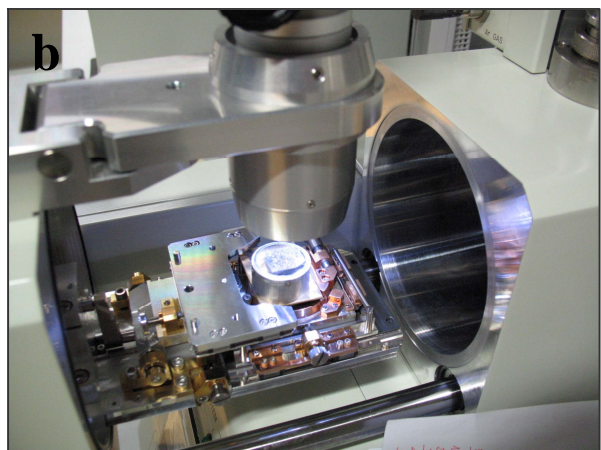


Figure 3. Cross Section Polisher at GUF.

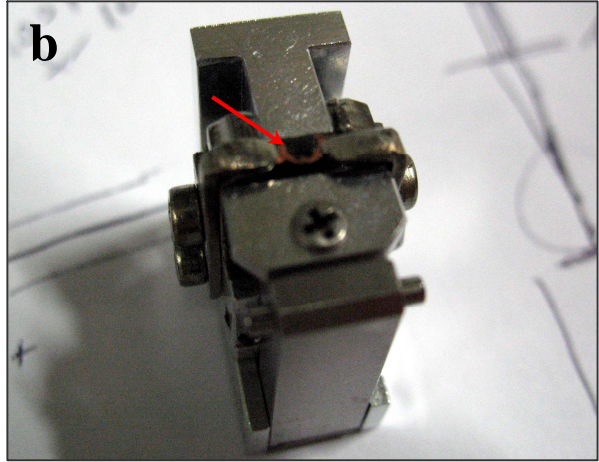


Figure 4. a. Argon Ion Slicer at GUF. b. Sample for TEM analysis, prepared by the Argon Ion Slicer.