

Oral Contributions

[MS40-03] Crystal structure refinement in polished thin sections by synchrotron tts-microdiffraction. Jordi Rius,^a Oriol Vallcorba^a, Carlos Frontera^a, Carles Miravittles^a, Ana Labrador^b

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Polished thin sections of materials with thicknesses up to 30 microns are commonly used in mineralogical, petrological, cement and archeological studies but can also have multiple applications in materials science. To allow the easy manipulation of the thin sections, they are fixed on glass substrates. In a recent contribution [1] the capabilities of the synchrotron through-the-substrate (tts) microdiffraction technique were studied for samples containing fine-grained phases. In such cases, continuous Debye rings are obtained in the diffraction experiment, so that the corresponding intensity data can be treated with powder diffraction methods. Very often, however, individual grains are large enough to give single-crystal patterns. By orienting the diffraction pattern obtained by tts-microdiffraction, the refinement of the crystal structure of a particular grain can be carried out without destroying the sample. Due to the flat shape of the sample, the X-ray refinement can be combined advantageously with laterally resolved microprobe/EDX measurements. As test example, this procedure has been applied to the determination of the potassium distribution in crystal structures of individual laumontite grains embedded in a thin section.

[1] Rius, J., Labrador, A., Crespi, A., Frontera, C., Vallcorba, O., Melgarejo, J. C. (2011). *J. Synchrotron Rad.*, **18**, 891–898.

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