



Absolute orientations from EBSD measurements - as easy as it seems?

Rüdiger Kilian (1), Michel Bestmann (2), Renée Heilbronner (1,3)

(1) University Basel, Department of Geosciences, Basel, Switzerland (ruediger.kilian@unibas.ch), (2) GeoZentrum Nordbayern, Erlangen, Germany, (3) Department of Geology, Tromsø University, Norway

In structural geology, some problems can be addressed by inspecting the crystal orientation of grains in a rock. Deriving shear senses, kinematics of flow, information on deformation processes and recrystallization are some examples.

Usually, oriented samples are taken in the field and, if inspected in an universal stage, the researcher has full control over the procedure and can make sure that the derived orientation is related to our geographic reference frame - that it is an absolute orientation.

Nowadays, usage of electron backscatter diffraction (EBSD) has greatly improved the information in the derived data (fully crystal orientations, mappings, etc. . .), and the speed of data acquisition. However, this comes to the price of having to rely on the vendor supplied software and machine setup.

Recent benchmarks and comparison of reference data revealed that for various EBSD setups around the world, the orientation data defaults to the wrong absolute orientation. The absolute orientation is not correctly derived - it commonly suffer a 180 degree rotation around the normal of the sample surface. In this contribution we will discuss the implications of such erroneous measurements and what kind of interpretations derived by orientation and texture data will be affected.