



Comparison between different techniques applied to quartz CPO determination in granitoid mylonites

Eugenio Fazio (1), Rosalda Punturo (1), Rosolino Cirrincione (1), Hartmut Kern (2), Hans-Rudolph Wenk (3), Antonino Pezzino (1), Shalini Goswami (4), and Manish Mamtani (4)

(1) University of Catania, CATANIA, Italy (rosaldapunturo@gmail.com), (2) Institute of Geosciences, Kiel University, Olshausenstrasse 40, 24098 Kiel, Germany, (3) Department of Earth and Planetary Science, University of California, 94720 Berkeley, California (USA), (4) Department of Geology and Geophysics, Indian Institute of Technology, Kharagpur 721302, West Bengal, India

Since the second half of the last century, several techniques have been adopted to resolve the crystallographic preferred orientation (CPO) of major minerals constituting crustal and mantle rocks.

To this aim, many efforts have been made to increase the accuracy of such analytical devices as well as to progressively reduce the time needed to perform microstructural analysis.

It is worth noting that many of these microstructural studies deal with quartz CPO because of the wide occurrence of this mineral phase in crustal rocks as well as its quite simple chemical composition.

In the present work, four different techniques were applied to define CPOs of dynamically recrystallized quartz domains from naturally deformed rocks collected from a ductile crustal scale shear zone in order to compare their advantages and limitation. The selected Alpine shear zone is located in the Aspromonte Massif (Calabrian Peloritani Orogen, southern Italy) representing granitoid lithotypes.

The adopted methods span from “classical” universal stage (US), to image analysis technique (CIP), electron back-scattered diffraction (EBSD), and time of flight neutron diffraction (TOF).

When compared, bulk texture pole figures obtained by means of these different techniques show a good correlation. Advances in analytical techniques used for microstructural investigations are outlined by discussing results of quartz CPO that are presented in this study.