

LATTICE PREFERRED ORIENTATION OF QUARTZ IN AN PAN-AFRICAN TRANSPRESSIONAL COLLISION ZONE; EASTERN DESERT IN EGYPT

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Lattice Preferred Orientation of Quartz was used to get information about differences in deformation geometry, temperature, and other deformation parameters within the Pan-African orogen in Egypt. Metamorphic core complexes parallel to the strike of the orogen are bordered by distinct ductile subvertical sinistral NW-trending strike-slip zones and low angle normal faults that form the NW and SE limits of these core complexes. This study compares both, Lattice Preferred Orientation of quartz in shear-zones and normal faults. A general trend in the change of quartz-c-axis patterns from S towards N can be observed. In the S oblique single girdles and maxima in Y have been observed whereas towards the N crossgirdle to asymmetric crossgirdle distributions dominate. The appearance of crossgirdles implies the dominance of basal a gliding with less pronounced rhomboeder a and prism ac gliding which is common for deformation under low grade metamorphic conditions. Quartz-c-axis patterns showing maxima in Y could be explained by the dominance of prism a gliding and are typical for medium to high grade metamorphic conditions. The variation of quartz-c-axis patterns from S towards the N is explained in terms of changing of metamorphic conditions during deformation from the S (medium to high grade) towards the N (low grade). This is related to the general progression of transpressional tectonics and exhumation of core complexes from the S (c. 640 Ma) towards the N (c. 570 Ma) under decreasing metamorphic conditions.