Development of crystal morphology during unitaxial growth in a progressively widening vein: II. Numerical simulations of the evolution of antitaxial fibrous veins

Chris Hilgers, Daniel Koehn, Paul D. Bons, & Janos L. Urai

The development of fibrous morphology and capability of fibres for tracking the opening trajectory were investigated using numerical simulations of a natural antitaxial fibrous vein. Starting from a non-unique best case, variation of fracture opening velocity, grainsize, wall roughness, growth anisotropy and crystal growth velocity shows that these parameters differ in importance for crystal morphology and tracking capability. Fibrous veins can be simulated using crack-seal opening of the fracture. Grain boundaries track the opening trajectory if the wall roughness is high, opening increments are small and crystals touch the wall before the next crack increments starts.