

Orientation of Features

Orientation is the position of a feature relative to its surroundings or another parameter (e.g., "Orientation/lower border of view area"). Orientation includes linear arrangements of features, minerals, cell-sized objects, and 3D morphological spatial arrangements across scales. One example is tunnels in igneous and metamorphic rock, which can be positioned relative to fractures, vesicles (bubbles), minerals, or other tunnels. An example argument for a biogenic prevalence of the tunnels is that cells reside at the margin of the vesicle and mine the glass for energy and material, since tunnel orientation allows the cells to continually encounter fresh glass. An argument for abiotic prevalence of the tunnels is that tunnels around olivine could follow lines of stress created by the differential thermal shrinkage of olivine and glass. An additional example includes filaments in a mat, which can have a vertical or horizontal orientation relative to the defined surface.