

Zircon coronas around Fe-Ti oxides: A physical reference frame for metamorphic and metasomatic reactions

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Ilmenite in mafic rocks (both gabbros and granulites) is typically surrounded by coronas of zircons ranging in diameters from a fraction of a micron to 10 micron across. Such zircons are inert during subsequent metamorphism (prehnite-pumpellyite to eclogite facies) and metasomatism (albitization and scapolitization) and can be found as trails in the new formed silicates. The trails link up to form polygons in the altered rocks outlining the former oxide grainboundary. We exemplify how this 3-dimensional framework of zircons can be used to (a) recognize metasomatic origin of rocks, (b) quantify the mobility of elements during mineral replacement (c) establish the growth direction of reaction fronts and (d) to identify the reaction mechanism.