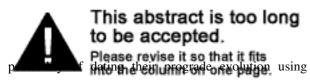
Evolution of REE minerals from diagenetic to amphibolite facies conditions in the Central Alps, with implications to geochronology

E. JANOTS, M. ENGI & A. BERGER

¹Institute of Geological Sciences, University of Bern, Switzerland, ejanots@geo.unibe.ch

We report on the REE distribution in metapelites from the northern Lepontine domains (Central Alps), taken along a well established metamorphic field gradient recording conditions from diagenetic to amphibolite facies. Our strategy has been to characterize texturally and chemically the REE-minerals, document their assemblages, and deduce mineral reactions which occurred with increasing metamorphism. In diagenetic to low-grade metamorphic rocks, LREE are contained in roundish inherited and/or minute newly formed monazite (Chemical U-Th-Pb dating), whereas HREE reside in xenotime. With the appearance of chloritoid, monazite vanishes, and LREE are taken up in idiomorphic homogeneous allanite. appearance of biotite, allanite acquires a first rim of epidote, and a second one grows contemporaneously with garnet. At the "chloritoid-out" zone boundary, allanite is replaced by monazite associated with plagioclase, biotite and/or staurolite. In our samples, the evolution of the REE-phases thus appears to be correlated with the succession of major silicate assemblages. This demonstrates potential for novel geochronology, since all of the samples display REEminerals, for which ages may be determined and related to the P-T conditions of their formation. In particular, the occurrence of allanite, epidote, and monazite in the same samples offers the unique



different chronometers.