



SHRIMP U-PB zircon geochronology of intrusive granitoids and anatetic leucogranites in the Gredos Massif, Central System batholith, Spain. Implications for the building of the batholith

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A detailed U-Pb geochronological study has been carried out on intrusive granitoids which form the Gredos Massif, in the central part of the Spanish Central System batholith. The detailed mapping carried out in the area reveals that the batholith was built by tabular granodiorite bodies of about 1 km in thickness that intruded pelitic metasediments (from hornfelses to migmatites and anatetic granites). Zircon crystals from 5 samples of 4 granodiorites and 1 anatetic granite have been analyzed by SHRIMP II methods in the Research School of Earth Sciences in Canberra (Australia), and the Beijing SHRIMP Center (China), resulting in significant age differences among the distinct granitoid bodies (from 311.8 ± 3.5 Ma to 303.9 ± 4.8 Ma), which entail a sequential emplacement for the batholith formation. In addition, the age of the anatetic granites coincides with that of the granitoids, so that we can conclude that these anatetic melts were segregated and emplaced during the formation of the batholith. Inherited zircons are abundant in granodioritic layers affected by assimilation processes. The presence of these xenocrystals affects the morphology of the igneous zircon overgrowths, dominating complex crystals with inherited cores in granitoids with a high percentage of assimilated material, and simple acicular crystals in granitoids not affected by the assimilation.