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U-Pb zircon geochronology of the Internal Liguride ophiolite (Northern Apennine, Italy)

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The ophiolitic bodies from the Alpine-Apennine belt are lithosphere remnants of the Middle to Late Jurassic Ligure-Piemontese basin. Most of these ophiolites preserve primary features recalling the magma-poor continental margin of Western Iberia. On the other hand, the Internal Liguride ophiolites from Northern Apennine display close structural and compositional similarities to modern slow and ultraslow spreading ridges.
The Internal Liguride ophiolites preserve evidence for the presence of morphological highs made of gabbroic plutons within mantle peridotites (Cortesogno et al. 1987). The gabbroic plutons consist mostly of coarse-grained gabbros to olivine-gabbros interlayered with sill-like hectometre-scale lenses of olivine-rich troctolites (e.g. Tribuzio et al. 2000). The gabbro-peridotite association records a high-temperature deformation event in ductile shear zones and is locally crosscut by later dolerite dykes with chilled margins. Waning of the magma supply and onset of hydrothermalism was followed by the exposure of the gabbro-peridotite association at the seafloor by amagmatic tectonic extension. The morphological depressions from the Internal Liguride domain are recognised on the basis of massive and pillow basalt flows interlayered with breccias and cherts (Cortesogno et al. 1987).
Whereas the geological and petrological evolution of the Internal Liguride ophiolites was extensively investigated, little is know about the timing of the magmatic events recorded by the Internal Liguride ophiolites. Previous geochronological studies yielded a discordant U-Pb zircon age of 153 +/- 1 Ma for a plagiogranite emplaced within the mantle peridotites (Borsi et al. 1996), and a Sm-Nd mineral isochron of 164 +/- 14 Ma for the gabbros (e.g. Rampone et al. 1998). On the basis of new single-grain U-Pb zircon datings by laser ablation ICP-MS, we therefore wish to constrain the timing of the evolution recorded by the Internal Liguride ophiolites. The preliminary U-Pb zircon data indicate that the formation of Internal Liguride igneous rocks cover a relatively long time span, thus gaining insights into absolute timing, duration and patterns of magma emplacement.

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