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**Tectonic evolution of mafic dykes in a suture zone,  
southern Iberia: Implications for the formation of Pangea**

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Southern Iberia records the Late Paleozoic amalgamation of Pangea and exposes today a fragment of Laurussia (South Portuguese Zone), which is spatially juxtaposed with autochthonous Gondwana (Ossa Morena Zone). Fault-bounded oceanic metasedimentary rocks, mélanges, and ophiolite complexes characterize the suture zone and are in turn crosscut by intrusive granitoid rocks and mafic dykes. The generation and emplacement of these mafic dykes and their relationship to the suture zone are undetermined.

Geochemical analyses (major, trace, REE) reveal that the mafic dykes exhibit a MORB signature and have Zr-Y ratios characteristic of within-plate basalts. Rare earth element profiles reflect derivation from a transitional, spinel lherzolite mantle. Uranium-lead geochronology indicate that the dykes were emplaced at ca. 316 Ma, which supports field evidence that the dykes are the youngest unit in the Pulo do Lobo Suture Zone. Samarium-neodymium isotopes indicate that the dykes were derived from juvenile mantle. A comparison of Sm-Nd isotopes of the dykes and other mafic suites from the Pulo do Lobo Suture Zone, Laurussia and Gondwana suggests that the sub-continental lithospheric mantle was replaced beneath Southern Iberia during the Gondwana-Laurussia collision. We propose that during the final stages of the Rheic Ocean's closure, the lithospheric mantle beneath Southern Iberia delaminated, resulting in the upwelling of juvenile asthenosphere and the formation of a new sub-continental lithospheric mantle beneath the Pulo do Lobo Zone. Taken together, these data provide insight into the processes responsible for the emplacement of syn- and post-collisional igneous rocks in suture zones and their association with the complex tectonic processes at work during the waning stages of continent-continent collision.