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Revisiting geochemical data from the Ossa-Morena Zone peralkaline rocks: New insights on petrogenesis during the Cambrian-Ordovician rift-related alkaline magmatism in the Iberian Massif

José Roseiro^{1,2}, Noel Moreira^{2,3}, Pedro Nogueira^{1,2}, Daniel de Oliveira⁴, and Luis Eguiluz⁵

¹Departamento de Geociências, Escola de Ciências e Tecnologias da Universidade de Évora, Rua Romão Ramalho 59, 7000-761, Évora, Portugal

²Instituto de Ciências da Terra (ICT), Polo da Universidade de Évora, Rua Romão Ramalho 59, 7000-761, Évora, Portugal

³Instituto de Investigação e Formação Avançada, Universidade de Évora, Palácio do Vimioso, Largo Marquês de Marialva, Apart. 94, 7002 - 554 Évora, Portugal

⁴Laboratório Nacional de Energia e Geologia, Mineral Resources and Geophysics Research Unit, Estrada da Portela, Bairro do Zambujal, Apt. 7586, Alfragide, 2610-999 Amadora, Portugal

⁵Departamento de Geodinámica, Facultad de Farmacia, Universidad del País Vasco UPV/EHU, Vitoria 01006, Spain

In SW Iberia (namely in the northernmost domains of Ossa-Morena Zone [OMZ]), NW-SE lineaments of peralkaline igneous massifs are found, known to have been emplaced during the Cambrian-Ordovician rift-related magmatic stage of the Variscan extension in northern Gondwana. In the Portuguese counterpart of the OMZ, these rocks can be found in two distinct tectono-stratigraphic segments, namely the Blastomylonitic Belt (BB) and in the Alter do Chão – Elvas Sector (ACES), intruding Neoproterozoic to Middle Cambrian successions (further extending to the Spanish side). Though the peralkaline magmas are coeval, some contrasting geochemical features allow a well-marked distinction between rocks located in the BB and ACES, which may provide sustained inferences on the petrogenesis and geotectonic framework. The BB rocks composition fit within the phonolite-trachyte spectrum, and show affinities with “within-plate” and A1-type granitoids. On the other hand, rocks from the ACES display trachyte to alkaline rhyolite compositions, chemical features of A2-type granitoids and “anomalous ocean ridge granite” tectonic setting of emplacement. However, within the ACES there are exceptions, as three massifs appear to have the same chemical signatures of the BB. Litho-geochemical data suggest the Ossa-Morena Zone alkaline melts (i) could be extracted from distinct sources, and/or (ii) underwent different degrees of fractionation along with variable crustal assimilation. In addition to litho-geochemistry data, further mineralogical and isotopic studies will be addressed to better understand and provide sustained inferences on the development of the northern OMZ peralkaline magmatism and related ore-forming systems.

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