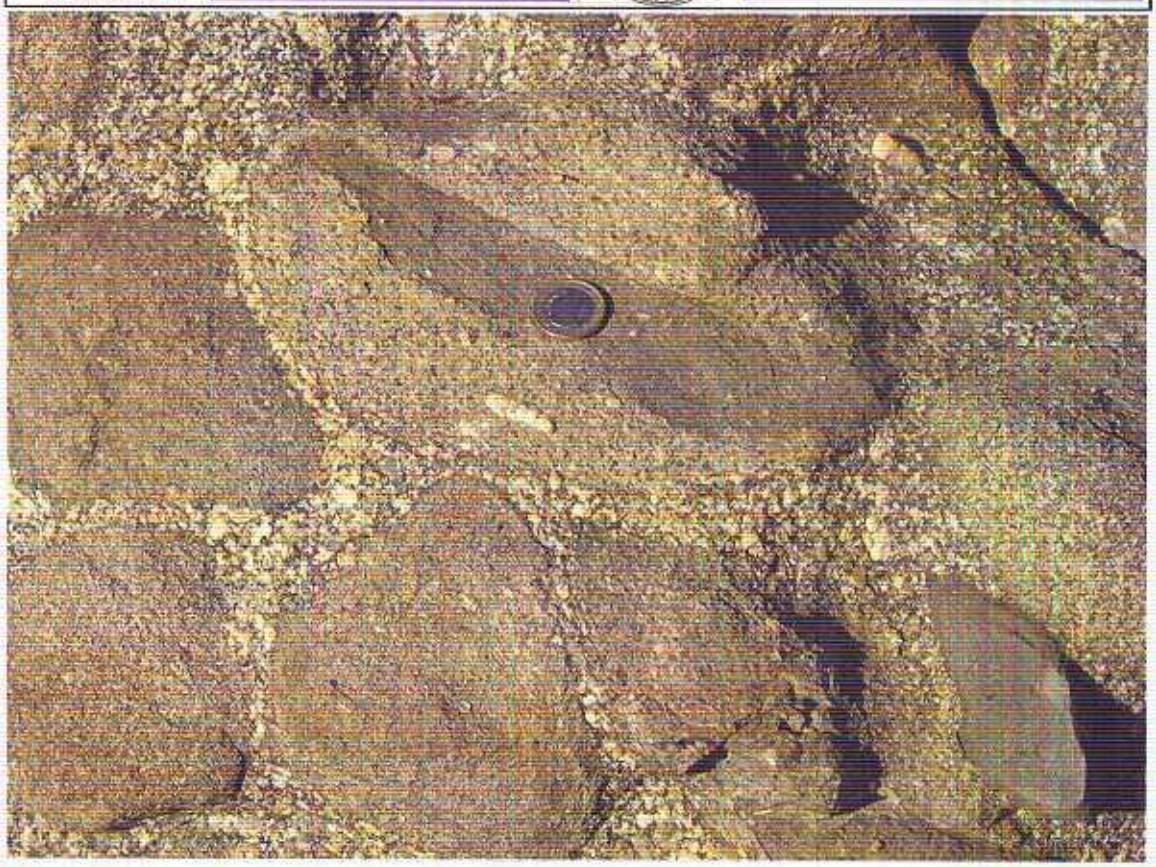
VNiVERSiDAD D SALAMANCA

ESCUELA POLITÉCNICA SUPERIOR DE ÁVILA

Universidad de Granada
Departamento de Mineralogía y Petrología



Seventh Hutton Symposium on Granites and Related Rocks

Avila, Spain, July 4-9 2011

Abstracts Book with Attendees Addresses

edited by:

J. F. Molina
J. H. Scarrow
F. Bea
P. Montero

Saito, S., Arima, M., Nakajima, T., and K, Tani., under revision. Petrogenesis of the Kaikomagatake granitoid pluton in the Izu Collision Zone, central Japan: Evidence for contribution of the K-rich Izu-Bonin rear-arc crust to the source region. Submitted to Contributions to Mineralogy and Petrology.

New geochemical and geochronological data of early Cambrian of SW Iberia: Calc-alkaline magmatism in the transition from active to passive continental margin in North Gondwana

Sánchez-García, T.[1], Pereira, M.F.[2], Bellido Mulas, F.[1], Chichorro, M.[3], Silva, J.B.[4], Valverde-Vaquero, P.[1], Pin, C.[5], Solá, A.R.[6]

1: IGME, Spain; 2: Universidade de Évora, Portugal; 3: Universidade Nova de Lisboa, Portugal; 4: Universidade de Lisboa; 5: Université Blaise Pascal, France; 6: LNEG-University of Coimbra, Portugal

The Ossa-Morena Zone (SW Iberia) displays a well-preserved record of the history of the northern Gondwana margin in Late Ediacaran-Early Cambrian times. This period of time is marked by the late-stage evolution of the Cadomian magmatic arc and related back-arc basins (c. 590-545 Ma), and the onset of rifting and widespread magmatism (c. 530-500 Ma) that led to the opening of the Rheic Ocean. Here we present new geochemical and geochronological data on some Cambrian granitoids of Ossa-Morena Zone (Barreiros, Barquete, Salvatierra de los Barros, Calera and Tablada bodies) hosted by Serie Negra, a late Ediacaran Succession made of metagreywackes, metapelites, black metacherts and metabasites. The Cambrian granitoids have compositions that vary between quartz-diorite/tonalite to granites, depending on the proportion of restitic material entrained from their source or their crystal fractionation grade. They show low REE contents with slightly higher degree of fractionation showing LREE $(La/Sm)_N$= 2.15 and HREE $(La/Sm)_N$= 1.05, and have negative Eu-anomalies (average Eu/Eu*=0.40). They also exhibit negative Nb, Sr and Ti anomalies and average Nb/Th=1.98, Nb/Y=0.6, Zr/Th=13.64 ratios that are close to those found in the Bulk Continental Crust. Sm-Nd data display moderate negative εNdt values, ranging from -3.5 to +0.04. The corresponding T_{DM} ages range from 1,30 to 2,57 Ga. The older model ages are suspect, because they correspond to samples with high $^{147}Sm/^{144}Nd$ ratios (0.16-0.18), interpreted to reflect late-stage fractionation of the Sm/Nd ratio, due to separation of a LREE-enriched mineral such as monazite. These ancient model ages and Th/Nb ratios close to upper continental crust values document a significant crustal component. These new whole rock data document the calc-alkaline composition of the Barreiros, Salvatierra de los Barros, Tablada and Calera granites and point to older continental crust materials as predominant contributor to the source of parental magmas. These granites are interpreted as the result of the evolution of mainly crustal magmas dominated by feldspar fractionation in the magma, in an early Cambrian rift-related event (Sanchez-Garcia et al., 2010). Their calk-alkaline signature of these granites is interpreted as result of inheritance of crustal materials derived of subduction-related igneous rocks from the Cadomian arc. New ID-TIMS U-Pb geochronology zircon data yielded an early Cambrian age (c. 524 Ma, U-Pb zircon CA-ID-TIMS dating) for the Barreiros granite. The age obtained reinforces the idea of the relevance of calc-alkaline magmatism associated with rifting in the early Cambrian recently demonstrated by SHRIMP U-Pb geochronology data obtained for the Barquete granite (c.526 Ma; Pereira et al., 2011).