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FOREWORD

Granites and Related Rocks: a tribute to Guillermo Corretgé

The retirement of Guillermo Corretgé Castañón from active academic life is an irreparable loss for Spanish geology. Guillermo has been the most important Spanish granitologist of his generation. His devotion to granite studies began when he was an undergraduate student of Geological Sciences at the University of Oviedo, and continued for the rest of his academic life. In 1968, Guillermo began his doctoral thesis under the supervision of Professor García de Figuerola, and defended it in 1971 at the University of Salamanca, where he attained his first academic position. Guillermo's dissertation was an integral petrologic study of the Cabeza de Araya batholith, the first of its class written by a Spanish petrologist.

During his early years in Salamanca, Guillermo met the French and Dutch geologists working in the Iberian Peninsula and stayed for several months in European universities, something unusual for Spanish scholars at that time. As a result, Guillermo established a fruitful and lasting collaboration with Ramón Capdevila (University of Brest, France) and Peter Floor (University of Leiden, Holland) which was deeply influential on Spanish petrology. The doctoral dissertations of these three (Floor, 1976; Capdevila, 1969; Corretgé, 1971) are the sources from which many of us have learned granite petrology. The seminal paper by Capdevila, Corretgé and Floor (1973) was, and still is, a cornerstone of Iberian granites studies. Neither the classification scheme proposed by these authors nor its genetic implications have yet been superseded.

Guillermo's appointment to Salamanca University in 1970 following Prof. Figuerola's move there led to the informal creation of the so-called "Salamanca school" of granite petrologists, which has had an enormous influence on the development of granite science in Spain. Prof. Figuerola and Guillermo promoted the studies of Structural Petrology and Numerical Petrology of granitoids, and supported the creation of the Salamanca Geochemistry Laboratory instilling in their students an interest in numerical methods and sophisticated instrumental techniques. This changed the way of studying granite rocks in Spain and created a modern mentality that was the decisive mark of the school of Salamanca. Fruit of that spirit is the role that members of the school have subsequently had in the creation of sophisticated analytical and experimental laboratories that have been essential for the advance of geology in our country.

In 1980 Guillermo moved back to the University of Oviedo where he created another research group on granitic rocks, promoted the XRF laboratory and established the first electronic microprobe laboratory in Spain. In Salamanca, Guillermo and his students had focused on granitoids from Extremadura, Salamanca and Zamora. In Oviedo, it was the turn of the Galician granitoids. The geology of these regions cannot be understood without Guillermo's contributions.

As a scientist, Guillermo stood out for his capability to analyze the granite problem in all its extension and perspectives. A passionate scholar of the thermodynamics of igneous systems, his discussions were always guided by phase diagrams as a fundamental tool to understand the processes of generation and crystallization of magmas. Most of us have seen Guillermo drawing phase diagrams on paper tablecloths and napkins in bars and guesthouses of remote villages to the patron´s surprise and bewilderment. Guillermo was also an excellent observer, impeccable at drawing geological maps and excelling in petrographic studies.

As a professor, Guillermo stood out because of his erudition, enthusiasm and generosity. His vast philosophical and historical culture, extensive knowledge of the sources of modern Geology, and scientific rigor in the observation and interpretation of data have been key features of his academic career.

Guillermo is a model university professor. Apart from his scientific and academic contributions, he has always set

an example of honesty and consistency with his ideas, and those of us who have had the fortune to deal with him directly know about his generosity and dedication. For all these reasons, we wanted to promote this special volume, which attests the advanced level that granitology has reached in Spain, in no small measure due to the contribution of our professor and friend Guillermo Corretgé.

Guillermo Corretgé (Photographed by P. Montero).

The contributions to this special issue cover the wide diversity of topics to which Guillermo Corretgé contributed during his scientific career. These include structural, thermodynamic, geochemical and geochronological aspects that were essential in developing new ideas and paradigms about granite magma generation.

Precise geochronology using sophisticated techniques of secondary-ion mass spectrometry (SIMS) on zircons, has revealed important data on the timing of magma generation. Montero et al. applied high-resolution techniques to in-situ analysis of U-Th-Pb and O isotopes (SHRIMP) and Hf isotopes (MC-LA-ICPMS) in zircons to study the origin of the Ollo de Sapo gneisses in Iberia; this outstanding igneous formation, of debated origin, was the source of many Variscan granites. Precise geochronology has also been used to constrain magma generation processes and the timing of magmatic processes in other papers of this issue. Díaz-Alvarado analyses crystallization of large K-feldspar megacrysts in granites by means of experiments on synthetic and natural systems with variable water contents, at magma crystallization conditions. An example of a combined geochronology and geochemistry study is that of González-Menéndez et al., in the Porriño granite in Galicia, to discuss possible intracrustal recycling of residual sources to account for the origin of post-Variscan calc-alkaline magmas. Peri-Gondwanan, Late Cambrian magmatic activity in Northern Iberia is identified by Andonaegui et al. using the geochemistry of deformed rocks of the allochthonous complexes.

Particular attention is also given in this volume to basic and intermediate plutonic rocks that are commonly present, but in reduced volumes, in the Iberian Variscan belt. Hornblendites from the Montnegre massif, Catalan Coastal Ranges, were analysed by Galán et al., who concluded that details of spinel compositions and geochemical relations pointed towards magma mixing. García-Moreno et al. undertook a detailed experimental study of the origin of Iberian "mixed series" cordierite-bearing monzogranites. They used reverse experiments on the Cabeza de Araya granites to set P-T limits on the crystallization of cordierite in monzogranite magmas. The study of the Valdepeñas pluton by Errandonea et al. has confirmed the relevance of the Late Carboniferous-Early Permian, post-orogenic and alkali-calcic plutons with cordierite in the Central Iberian Zone, postulating a possible origin from meta-igneous sources. Villaseca et al. applied the use of magnetic susceptibility measurements in granites as indicator of the redox state of granite magmas during crystallization.

The characteristic K-rich, intermediate magmatism (vaugnerites) which is associated with granitic batholiths in the Iberian Variscan belt, was studied in detail by López-Moro et al. in a sector of the Central Iberian Zone, supporting the role of mantle source reactivation during the Variscan orogenic cycle. Pereira et al., combining zircon geochronology and petrogenesis, discussed the problem of the abundant post-tectonic calc-alkaline plutons in Southern Iberia as possibly related to a Cimerian orogenic cycle. Studies of experimental phase equilibria in granite systems have proved fundamental to identify magma sources and processes. Experimental studies of both, magma generation and crystallization are included in this special issue. Finally, Díez-Montes et al. used maps of radiometric anomalies to identify K-rich granites in the South Portuguese zone.

This special issue presents the current state of knowledge regarding the study of Iberian granites and related rocks, and suggests potential future developments. We hope that the papers gathered here help to transmit our enthusiasm to next generations in the same way that Guillermo and his colleagues transmitted it to us.

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