



## INTRODUCTION

### Granites and Associated Mineralizations

A.N. SIAL<sup>a</sup>, V.P. FERREIRA<sup>a</sup> and R. A. FUCK<sup>b</sup>

<sup>a</sup>NEG-LABISE, Department of Geology, Federal University of Pernambuco, C.P. 7852, 50732-970, Recife, Brazil, <sup>b</sup>Institute of Geociences, University of Brasilia, Brasilia, D.F., 70910-900, Brazil

This special issue is one of four special publications dedicated to the Second International Symposium on Granites and Associated Mineralizations (Second ISGAM) held at Salvador, Bahia, Brazil, in August 1997. It offers a selection of papers which were presented during that symposium. Around 150 scientists from about 20 countries participated in the Symposium, assuring high-level debates and a rather state-of-art assessment of the knowledge of granitic rocks and the mineralizations they may host. The formal meeting was preceded by five theme-based field trips where the participants were able to examine, sample, and argue about Archean to Early Paleozoic granitoids in northern, northeastern or eastern Brazil. The technical program included five oral presentations in the morning sessions and two in the afternoon sessions, with a two and a half hour poster session in between. The presentations covered several aspects of granitology, including petrology, metallogeny, structural, and isotopic behavior. In this regard, the number of scientific contributions offered to the Symposium dealing with metallogeny related to granites was beyond expectation. The IGCP project 371 (COPENA) cooperated with ISGAM organizers and had one day of the symposium for presentation of their scientific contributions. The COPENA project is concerned with the role of granites for geologic correlation between Proto-South America and Laurentia, as well as other cratons in the Atlantic realm.

R. Dall'Agnol (Federal Univ. of Pará) demonstrated that in northern Brazil and adjacent countries, rapakivi granites display A-type and within-plate geochemical signatures, being meta- to peraluminous with subordinate peralkalic terms. They are tin-mineralized with associated Y, REE, Th, F (cryolite), Zr and In. Valdez P. Ferreira (Federal Univ. of Pernambuco) attempted the characterization of tectonostratigraphic terranes of the Borborema province in NE Brazil, based on geochemical and isotopic signatures of granitoids. A.N. Sial examined the commonalities of magmatic epidote in granitoids of NE Brazil, NW Argentina, and Chile.

H. Martin (Univ. Clermont-Ferrand) showed, on geochemical grounds, that adakites are modern analogs of Archean TTG and that both have the same

source and petrogenesis. Archean TTG, however, are less Mg, Ni and Cr enriched than the adakites indicating that mantle-magma interactions were less efficient due to shallower depth of slab melting. Carlos W. Rapela (Univ. La Plata) discussed the unusual occurrence of orbicular cordierite rock in the Eastern Pampean Ranges in Argentina, suggesting that rapid crustal anatexis, at low pressure, resulted in high degrees of melting and allowed formation and separation of cordierite as discrete bodies. A. E. Fallick (SURRC) discussed the investigation of rapakivi granites from Greenland, based on stable isotopes ( $\delta O^{18}$  and  $\delta D$ ), invoking low water content as key to understanding how these rocks could exhibit remarkably homogeneous oxygen isotope signatures and, at the same time, large variation in their hydrogen isotopes. W. Edryd Stephens (Univ. St. Andrews) focused on the study of mafic polycrystalline aggregates (amphibole-rich clots) as potential restites in I-type granites with special emphasis to the Strontian pluton in Scotland.

Problems related to migration and emplacement of granitic melts were addressed by M. Brown (Univ. of Maryland), who discussed the self-organization and migration of granitic melt in orogenic systems. He stressed that much of the dynamics and spatial relationships of orogenic systems can be accounted for through the coupling of deformational, anatectic, and transport processes. R. Weinberg (Univ. of Oxford) presented a provocative talk on diapirism and multi-stage melting of the crust, while D. Hutton (Univ. of Birmingham) discussed the solution to the space problem in syntectonic granite emplacement, calling attention to the fact that magmatic fluid pressures are an indistinguishable part of the regional (effective) stress field. M. Pimentel (Univ. of Brasilia) based on isotopic (U-Pb/Sm-Nd) data for granitic rocks in central Brazil, presented an evolution model for the Neoproterozoic Brasilia belt, which involved the amalgamation of juvenile island arc terranes, as well as small continental fragments. P. Sabaté (Univ. Montpellier) examined the formation and evolution of granitoids in the NE São Francisco craton, State of Bahia, in the context of continental growth between 3.4 and 1.9 Ga. Age groups suggest a rough period-

icity for granitic magmatism, major periods of magmatic activity alternating with 200–300 Myr periods of quiescence. B. Chappell (Australian National University) discussed the use of trace element behavior in the characterization of haplogranites using Australian examples.

Metallogenetic studies included those by P. Candela (Univ. of Maryland) who reported studies on the partitioning of ore metals in melt-crystal-volatile phase systems and its application to mineral exploration (Cu partitions strongly into sulfides, but not magnetite, suggesting that high oxygen fugacity favors the production of Cu-rich ore fluids). P. Piccoli (Univ. of Maryland) discussed the estimation of HCl and Cl in the magmatic volatile phase based on granite/apatite chemistry as a tool to discriminate high vs. low-Cl granite-ore systems. M. Pichavant (CRSCM-CNRS) focused on the genesis of tin mineralizations, demonstrating that mechanisms of concentration and transport of tin are largely dependent on oxygen fugacity.

The publications included an abstract with program volume and a field trip guide. About 50 papers presented in this symposium will be published, besides this, in 3 other special issues: *Lithos*, *Annals of the Brazilian Academy of Sciences* and *Brazilian Geological Magazine (RBG)* of the *Brazilian Geological Society (SBG)*. Major financial support and all infrastructure for the organization of the Second ISGAM were provided by the government of the State of Bahia, to whom the Organizing Committee expresses its gratitude, especially Dr. Paulo Souto, petrologist and governor of this State. The Brazilian Academy of Sciences, the National Council for Scientific and Technological Development, the Financing Agency for Studies and Projects (FINEP), the Third World Academy of Science, and ORSTOM were other co-sponsors. The Organizing Committee gratefully acknowledges the as-

sistance of geologists (Ruy F. de Lima, Helio C. A. de Azevedo and Heli A. Sampaio Filho) and staff members (Terezinha V. Maia and Lucia Mezedini) of the Superintendency of Geology and Mineral Resources of the government of Bahia. A special word of thanks goes to Roberta G. Brasilino, who provided secretarial assistance during the organization of this special issue.

#### REVIEWERS

The guest editors express their appreciation of the reviewers who gave their time and effort toward the volume:

Maria do Socorro Adusumilli, Brasília, Brazil  
 Jorge da Silva Bettencourt, São Paulo, Brazil  
 Adusumilli Bhaskara Rao, Brasília, Brazil  
 Hartmut Beurlen, Recife, Brazil  
 Umberto G. Cordani, São Paulo, Brazil  
 Ronald V. Fodor, Raleigh, North Carolina  
 Celso de Barros Gomes, São Paulo, Brazil  
 Leo A. Hartmann, Porto Alegre, Brazil  
 Emanuel F. Jardim de Sá, Natal, Brazil  
 Timothy Liverton, Brasília, Brazil  
 Leon E. Long, Austin, Texas  
 Ian McReath, São Paulo, Brazil  
 J. M. Correia Neves, Belo Horizonte, Brazil  
 Ana Maria M. C. Neiva, Coimbra, Portugal  
 Miguel A. Parada, Santiago, Chile  
 Marcio M. Pimentel, Brasília, Brazil  
 Carlos W. Rapela, La Plata, Argentina  
 Michael Roden, Athens, Georgia  
 Julio Saavedra, Salamanca, Spain  
 Wilson Teixeira, São Paulo, Brazil  
 Alejandro J. Toselli, S.M. Tucuman, Argentina  
 Juana Rossi de Toselli, S.M. Tucuman, Argentina  
 Randy Van Schmus, Lawrence, Kansas  
 James A. Whitney, Athens, Georgia