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GRANITIC PEGMATITES

PREFACE

In August 1990, project 282 of the International Geological Correlation Program, on Rare-Metal Granites, held its sessions in conjunction with the IAGOD conference in Ottawa. As a part of the IGCP activities, a workshop on the mineralogy, geochemistry and petrology of granitic pegmatites was organized at the University of Manitoba in Winnipeg. The workshop was attended by 29 participants from six countries. It brought together a diversified spectrum of pegmatite investigators and related specialists, who devoted themselves to focused discussions and field trips, protected from distractions routinely inflicted by broad-based conferences.

This volume presents many papers delivered at the workshop, and additional contributions from potential participants who could not attend for logistical reasons. Although far from all-encompassing, the volume provides a good sampling of studies resulting from current research into granitic pegmatites, across the different disciplines involved: experimental insights and modeling of pegmatite crystallization, crystal chemistry of rock-forming and accessory minerals, evolutionary aspects of mineral assembiages carrying the rare elements, and various aspects of large-scale systems of fertile granites and their pegmatitic progeny. In this issue, we have organized the twenty-six papers according to this grouping of topics.

Research well focused on themes pertinent to the internal constitution, conditions of crystallization, and ultimate mode of formation of granitic pegmatites was relatively dormant in the nineteen seventies. One might view the overall mood as one of general complacency, after the breakthroughs of the previous decade. In 1982, a short course was held on Granitic Pegmatites in Science and Industry, sponsored by the Mineralogical Association of Canada. The resulting volume, Short-Course Handbook **8**, entitled *Granitic Pegmatites in Science and Industry*, presented a synthesis of the state of the art at that time, and served to focus attention on unresolved issues. Also, it filled a gap in the realm of igneous petrology not at all well covered by the standard textbooks.

In the decade since the publication of Short-Course Handbook, there has been an upsurge in interest in the makeup and ultimate origin of granitic pegmatites. The new studies, which benefitted from much improved analytical techniques, brought to light many problems incorporated in traditional concepts. Simplistic interpretation of many mineral groups, classic explanations of internal evolution of pegmatite bodies, and quite a few petrogenetic speculations have undergone thorough reviews. The application of numerous new techniques, in experimental approaches, structural crystallography, studies of fluid inclusions, isotope geochemistry, *etc.*, made significant inroads into the problems posed by one of the most complex of petrological systems; it is no great surprise that the consolidation of granitic melts, moderately to extremely enriched in volatile and rare-element components, still resists our efforts to interpret all its facets. The present volume is a testimony to the abundance of fresh ideas and radical modifications of old concepts, all of which are gradually closing the gap between geological reality and our knowledge.

The overall success of the IGCP workshop stimulated the founding of a Special Interest Group, a joint venture of the Mineralogical Association of Canada and the Mineralogical Society of America. Since 1990, the Pegmatite Interest Group organized sessions and symposia in Colorado, California, Nova

Scotia and Czechoslovakia, and several meetings of the PIGs are in the planning stages. The future of pegmatology looks bright indeed!

The timely publication of a voluminous thematic issue such as this requires the collaboration of all participants, the authors first of all, the Associate Editors, Richard N. Abbott, Jr., Bernard Bonin, Eugene E. Foord, Joel D. Grice, and Emil Makovicky, who helped us with some of the manuscripts, the referees consulted by them and by us, and Vicki Loschiavo, Managing Editor. We express our sincere thanks for their help. We also express, on behalf of the Mineralogical Association of Canada, sincere thanks for a grant in aid of publication of this thematic issue from the Geological Survey of Canada, financial contributions to this end from Pancontinental Mining Ltd. (Australia), Falconbridge Ltd., and Inco Limited (Manitoba Division), and the continuing support of the Natural Sciences and Engineering Research Council of Canada.

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