

Friends of the Igneous Rocks: Second Meeting

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Volume 14, Number 4, December 1987

URI: https://id.erudit.org/iderudit/geocan14_4con01

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Publisher(s)

The Geological Association of Canada

ISSN

0315-0941 (print)

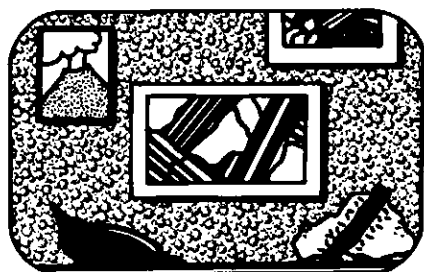
1911-4850 (digital)

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Cite this article

Russell, J. K. (1987). Friends of the Igneous Rocks: Second Meeting. *Geoscience Canada*, 14(4), 230–230.

Conference Reports



Friends of the Igneous Rocks: Second Meeting

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The 1987 meeting of Canadian igneous petrologists was hosted by Tom Pearce of Queen's University. The informal conference, held 24-25 August, represents the second meeting of this group of petrologists. The inaugural meeting, in 1986, was organized by Jim Nicholls of the University of Calgary. These meetings are designed to improve communication between researchers working in igneous petrology. The style has been informal and encourages scientists to present their latest findings. In addition to the Queen's faculty and graduate students, there were participants from McGill University, Carleton University, University of Ottawa, University of Calgary and the University of British Columbia. After the participants were welcomed by John Dixon, the new Geology Department Head at Queen's, the program began in earnest, and the presentations are summarized below.

Angela Kolisnik (Queen's U) is nearing completion of her study of the petrography and mineral chemistry of mixed intermediate lavas from the Mexican volcano, Popocatepetl. Her research has used laser interferometry to delineate the complex zoning in disequilibrium and equilibrium mineral assemblages. Terry Swinamer (Queen's U) presented results on the chemistry and mineralogy of the Sierra Chichinautzin volcanic rocks. The suite is dominated by intermediate

rocks but includes a basalt that seems to have crystallized from a primary melt. Jim Nicholls and Mavis Stout (U of Calgary) presented results of their work on the 1967-68 Halemaumau-Hiiaka Crater eruptions of Kilauea volcano. They combined whole-rock and mineral chemistry with thermodynamic modelling to demonstrate that lavas from the two craters are co-genetic and that the Hiiaka picrites could represent melts which fractionated to form the Halemaumau basalts.

Heather Jamieson (Queen's U) is continuing her experimental investigations of spinels in the system $MgO-FeO-Fe_2O_3-SiO_2$. Her future experiments are directed at refining mineral geothermometry and geobarometry using the assemblages: $OI + Sp$ and $OI + Sp + Opx$. Dan Schulze (Queen's U) presented an overview of his work on the geothermometry and geobarometry of peridotitic nodules and associated megacrysts. His research is directed at understanding the origin of kimberlites and related magmas. Richard Ernst (Carleton U) described the theory of several new types of Pearce Diagrams as applied of igneous petrology. Using simple and complex numerators with a trace element concentration as denominator, he established several plots that discriminate among a wide variety of crystal-fractionation hypotheses.

Bob Martin (McGill U) is currently studying the petrology of topaz rhyolites. He presented results and ideas based on his examinations of material from Topaz Mountain and Honeycomb Hills, Utah. By investigating the compositions of melt inclusions in phenocryst assemblages, he hopes to constrain melt's composition. The whole-rock compositions typically are modified by sub-solidus reactions. Tony Fowler (U of Ottawa) has completed a study of the geochemistry of varioles in basalts in the Abitibi greenstone belt. His work demonstrates that varioles represent the products of spherulitic crystallization. REE geochemistry was used to illustrate that the "felsic" composition of the varioles resulted from albitization of spherulites. Tom Pearce (Queen's U) presented recent work using Nomarski Interference Contrast Imaging of polished surfaces of volcanic rocks (mainly andesites from Europe and the Americas). This work was begun

several years ago and produces incredibly detailed images of minute textures that are not visible using conventional optical techniques. Tom forgot several locations during his talk; however, this lapse was understandable in light of his marriage plans for the following week.

At the conclusion of the seminars, the Department of Geological Sciences hosted a wine and cheese reception for the participants at the Faculty Club.

Day 2 involved a seminar by Pete Roeder on the petrology of Hawaiian basalts from Kilauea Iki. He is currently investigating through experimentation and electron microprobe analysis the controls on the crystallization and composition of chromite in basaltic magmas. The remainder of the day was spent in the Laser Laboratory. Tom Pearce and Craig Rice introduced the participants to the Laser Interference and Nomarski Interference Contrast techniques now being used to quantify the geometry and range of compositional zoning in minerals. Most participants arrived with prepared thin sections and, in a hands-on demonstration, obtained some experience in these new techniques. Some were fortunate enough to leave with photographs or electronically produced images of their material.

On behalf of the igneous petrologists who attended the workshop, I thank the organizer, Tom Pearce, and the host department for two stimulating and enjoyable days. Next year, the meeting will be organized by the undersigned at the University of British Columbia. I look forward to seeing you there.

Accepted 20 October 1987.