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The Challenge of Finding New Mineral Resources: Global Metallogeny, Innovative Exploration, and New Discoveries

Volume I: Gold, Silver, and Copper-Molybdenum

Editors

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Preface

This Society of Economic Geologists Special Publication is focused on the global challenge of finding new mineral resources. Metals prices have once again been on the rise during the past few years and exploration budgets continue to increase. But the general trend of the past several decades has been continuing: there tend to be fewer new discoveries and identification of world-class ore systems are becoming rarer each year. Many terrains and provinces with long histories of discovery have reached exploration maturity. Innovative exploration in these brownfields environments, as well as in less traditional greenfields settings, is essential to meet society’s demands for new mineral resources.

These two volumes represent the first detailed descriptions of many of the most important new discoveries of the past few years. Most papers emphasize the key characteristics of deposits from more than a dozen countries on six continents, particularly those ores rich in gold, silver, copper-molybdenum, zinc-lead, nickel, and uranium. A key to discovery is following the lessons learned by experienced and successful explorationists; thus, a large component to the majority of these papers is the inclusion of the steps that were essential to finding new orebodies. Many of the included histories detail how concealed mineralized zones were first identified through the integration of good geological field work with the most modern techniques in geochemistry or geophysics.

Strategies for successful exploration are dependent on a thorough understanding of the correct ore deposit model. Our ideas seem to be constantly shifting on key characteristics that are most useful in the exploration for a specific deposit type. Hence, this publication also includes a number of overview papers for each metallic commodity that summarize the current thinking on recent advances in the metallogenic models for the most important deposits containing resources of each commodity.

These papers contain the comprehensive material used to support the majority of the talks presented at the SEG 2010 Conference, The Challenge of Finding New Mineral Resources: Global Metallogeny, Innovative Exploration, and New Discoveries, held in Keystone, Colorado, October 2–5, 2010. We thank all authors for their cooperation in helping to meet a tight deadline, yet maintaining the required high quality of the papers. This deadline was only met because of the copy editing efforts of Mabel Peterson and Alice Bouley, and layout skills of Vivian Smallwood. Finally, all papers benefited from the input of expert referees, who are listed below.

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