

## **Perspectives for Mineral Exploration in the 21st Century**

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Demand for minerals and the need for increased deposit-discovery rates will continue to grow in the century ahead. The factors driving the growth will be a doubling of the global population, increasing rates of per capita consumptions, continuing technological innovations, and the penetration of technology into all parts of all societies.

All metallic mineral resources to date have come from the continental crust. The recent discovery of mineralization in the oceanic crust suggests that ocean mining may commence in the 21st century. Nevertheless, the frequency of mineralization in the oceanic crust appears to be so much less than that in the continental crust that exploration and mineral production in the 21st century will continue to be primarily focused on the continental crust.

So far only half of the continental crust has been explored for mineralization. The rest is covered by unmineralized sediments that are too thick for current geophysical or geochemical exploration methods to penetrate. Although many mineral deposits probably remain to be found in the currently prospectable half of the crust, the challenge for the 21st century is to carry out exploration under ever deeper cover, and to eventually be able to prospect the entire continental crust.

The last 50 years has been a time when a lot of elegant research into ore deposit genesis, rock-water interactions, stable isotope geochemistry, and tectonic settings, has been carried out, but that research has not yet played a significant role in mineral exploration. However, this body of research, combined with an ever-growing database of deposit models, will become a critical component of exploration in the 21st century.