

BUSINESS INNOVATION SYMPOSIUM (E6)
New Space and New Science (3)

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CROSS-POLLINATION OF BUSINESS AND SCIENCE IN ASTEROID MINERAL EXPLORATION

Abstract

Commercial asteroid mineral exploration is creating opportunities for the scientific community. Mineral exploration is a necessary step in the mining life-cycle, and is usually broken down into several phases: regional geophysics, local geophysics, surface sampling, exploration drilling, delineation drilling, along with mineralogical investigation and metallurgical test work on bulk samples. This business process exists to progressively reduce geological risk; the mineralization may not be as rich or extensive as needed, or the geochemistry may not be amenable to cost-effective extraction and refining. In estimating the resource potential of a target mineralization, company geologists rely on geological theories and models to predict location and extent of commercial concentrations of minerals. Based on these theories and supported by available data, models are created which predict the expected mineral resource quantity estimate the value of potential mine development.

The geological risk exists because geology is not a “completed” science. Minimization of geological, mining, and processing risk must be managed, and especially for such a new area as asteroid mining. Thus any company undertaking asteroid mineral exploration for financial gain will find itself closely engaged with the scientific community in order to arrive at better models of the target mineralization.

This paper will highlight the activities of Deep Space Industries, one of the new asteroid resource companies, and discuss the opportunities and challenges for scientists wishing to engage with commercial companies for scientific gain.