Extraterrestrial Drilling

By Kris Zacny

“The easy stuff has been done.” Currently, the drill systems have to operate and function in increasingly challenging and hostile environments. These environments include (but are not limited to) deep drilling for Oil and Gas, Geothermal drilling in hot rocks, exploring the seafloor (for resource mining), drilling into ice sheets (driven by science) in the Antarctic, and planetary drilling.

This presentation will focus on extraterrestrial drilling. I will briefly describe the history of planetary drilling and notable current development efforts that include robotic surface coring drills, autonomous ice drills, wireline systems, and drills with embedded sensors such as Laser Induced Breakdown Spectroscopy (LIBS). A number of examples from field deployment in the Antarctic and the Arctic will be provided. Finally, I will share a few exciting examples of current and future missions requiring subsurface access technologies.