exploration and metallurgy in Germany and support mining sector investment attraction. Beak runs its own exploration program for Sn, W and Li in the German Erzgebirge on the Sosa and Oelsnitz licenses together with international partners. "The integration of mineral exploration and research with software development allows new software products to meet exact practical requirements."

## Laser spectroscopy for lithium

SciAps reports that "for the first time ever a handheld device was used for instant, on-site lithium in soil measurements as part of a lithium exploration project." The pioneering effort was made by Lithium-Australia NL at the Seabrook Rare Metals Venture in Western Australia. The analysis was performed using a SciAps Z-300 handheld LIBS analyser.

LIBS - laser induced breakdown spectroscopy - is an elemental analysis technique long established in the laboratory, and only recently migrated to a handheld platform by SciAps. LIBS is very much a complementary technique to handheld XRF. SciAps also manufacturers a leading handheld XRF.

The pattern of lithium anomalism could be determined by direct measurements of Li using handheld LIBS, rather than conjecture from pathfinder elements.

Lithium Australia (LIT) says it has accumulated significant experience in geochemical modelling of prospective lithium terrains and in particular the soils derived from pegmatites containing lithium micas. The Seabrook Rare Metals Venture (LIT 80% and Tungsten Mining 20%) consists of six exploration licences, located on the shores of Lake Seabrook, some 60 km northeast of Southern Cross and 10 km southeast of Koolyanobbing, Western Australia.

Hand-held LIBS was used to compare real-time lithium spectral data, with various geochemical signatures generated with field portable XRF equipment. "The results show conclusively that pattern of lithium anomalism determined by hand-held LIBS reflects the areal extent, and shape to field-portable XRF alkali metal anomalism which in this area is a good pathfinder for lithium.

"The success of the LIBS lithium geochemical modelling has led to more extensive evaluation for immediate use on the Electra project (LIT 25% and Alix Resources Corp 75%). A SciAps Z300 machine has been calibrated using a wide grade range of lithium clays generated from recent sampling. Real-time data will be used to maximize the benefit of drilling, scheduled to commence in the near future."

Managing Director of Lithium-Australia, Adrian Griffin, said his company "has worked for some time with SciAps to perfect the use of LIBS technology in geochemical applications. The extension of technique to the real-time control of drilling in lithium clays is a breakthrough that should reap immediate financial benefits, by maximising the effectiveness of our first round of drilling in Mexico."

## Drilling is still essential

The government of Ontario has awarded Boart Longyear Canada $1.37 million to support the development of a mineral exploration drilling site and drilling systems technology.

Investments by the Northern Ontario Heritage Fund Corporation (NOHFC) in projects like these have the potential to improve safety for drillers, increase efficiency, reduce drilling costs and create jobs once the products are commercialised.

Michael Gravelle, Minister of Northern Development and Mines for the provincial government and Chair of the NOHFC, joined Boart Longyear President and CEO Jeff Olsen and other Boart Longyear executives at the company's booth at MINExpo to announce this.

"The Ontario government is very pleased that Boart Longyear's management team has chosen the Sudbury region for its newest R&D facility," said Gravelle. "It is a very significant step in building up our R&D mining cluster in Northern Ontario."

With the support of the NOHFC funding as well as a matching corporate capital investment, Boart Longyear will work at the Northern Centre for Advanced Technology (NORCAT) to test and develop several proprietary technologies, including driller-deployable geochemical technologies and other new technologies that will increase productivity.

"We are grateful to the government of Ontario for its significant commitment to our efforts to improve safety, increase efficiency and reduce drilling costs," said Olsen. "Its investment will pay long-lasting dividends to the mining industry in Northern Ontario and around the world."

*In a recent product development shown at MINExpo, Boart Longyear has combined proven technology from its most popular surface coring drill rigs to create the powerful LF™160*

Always a company to put significant resources into R&D, Boart Longyear has also signed a licening agreement with the Deep Exploration Technologies Cooperative Research Centre (DET CRC) for the Wireless Sub, a new patent pending technology solution that enhances safety and productivity in diamond drilling.

The Wireless Sub couples the drill rig to the drill rods in the hole and provides more accurate, real-time measurement of drilling parameters – such as feed force, torque, water pressure, rotation speed, axial acceleration and tangential acceleration. Extensive DET CRC testing operations, using parameters monitored by the Wireless Sub, have achieved substantial gains in rate of penetration and bit life when compared to drilling operations at the same locations using information from traditional drill rig gauges.

"The Wireless Sub provides vital information from detailed parameters and is the next step in driving safe drilling productivity," said Mike Ravella, Director of Geological Data Services for Boart Longyear. "We are very pleased to add the Wireless Sub to our suite of innovations. We look forward to commercialising it and developing additional applications for the technology in the future."

Real-time data from remote drilling sites can be reviewed worldwide by exploration teams, and the technology's data logging feature allows drillers to replicate the highest performing parameters in any drilling program.

The Wireless Sub was developed by DET CRC participants and affiliates CSIRO, Globaltech Corp, Epslog and Boart Longyear.

The DET CRC was established in 2010 under the Australian Government's CRC Program to develop technologies to discover new mineral deposits at depth beneath barren rock cover.

When paired with the FL262 FREEDOM™ Loader, Boart Longyear's LF160 combination is ideal for contractors who want to target sophisticated surface drilling exploration contracts that stipulate some of the highest safety standards, without compromising on productivity. Attributes include:

- Totally hands free rod handling
- Optimal safety without compromising on productivity
- Designed to today's rigorous CE standards
- Up to 1,800 m of NQ™ depth capacity.

The newest addition to its technologically advanced drilling rig family of products, the new FURY series leverages the Schramm heritage of high mobility, rugged durability and power density to deliver what the company describes as "a cutting-edge, configurable fit-for-purpose machine."

"This new rig series, including its name, was designed and developed with direct customer feedback to meet their ever-evolving needs today and as the industry ramps up activity in a continued low-price environment," said Michael Dynan, Schramm's Vice President of Portfolio and Strategy.

"From concept to iron, this rig series leverages our 116-year experience in design and innovation to showcase the very best Schramm has to offer."

Feature highlights of this next-generation machine include electronic controls providing real-time hydraulic response, remote monitoring functionality, US EPA Tier 4 Final compliance, tight turning radius for improved mobility, and a tilting top drive to facilitate hands-free pipe handling. Additionally, the air and hydraulic power systems are decoupled, which provide significant fuel savings. Customers working in mining applications that include large-diameter water management and exploration now have a new tool to drive value for their stakeholders.

"We sought to build a drilling rig to meet our needs for a safer, faster and more cost-competitive machine than what's on the market today," said Tyson Thomas, President of Thomas Drilling, which took delivery of the first unit. "Schramm is a recognised leader in innovation, and with the advanced manufacturing, assembly and testing facility located in Pennsylvania, Schramm has been the ideal partner to ensure optimal quality control and on-time delivery. We are extremely pleased with FURY and know our customers will be as well."

Atlas Copco showcased its new Christensen 140 surface core drilling rig at MINExpo 2016. The rig offers a new feed guard with interlock function, a more robust mast and a rotation unit that reduces maintenance time.

Marie Bergman, Product Manager, Atlas Copco, described the rig as "a powerful, more robust