

Drill Core and Sample Scanning with the Ecore Laser Induced Breakdown Spectroscopy (LIBS): The Universal Solution for the Mining Industry

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The mining industry is increasingly seeking and needs innovative solutions for the scanning of samples to facilitate big data mining and leverage artificial intelligence (AI) for derisking, optimal decision-making and efficiency for all project life cycle stages. As an example, traditional manual drill core logging is labor-intensive and prone to human error, limitations and bias, highlighting the need for automated, precise, standardized and comprehensive technique. Existing methods, such as hyperspectral imaging (NIR) and X-Ray Fluorescence (XRF), have made significant contributions however have limitations.

ECORE LIBS emerges as a groundbreaking technology that addresses these limitations. LIBS employs laser-generated plasma by vaporizing-atomizing the rock surface offering an unparalleled speed (1300-2000Hz), ability to detect and quantify its chemical composition with one scan pass. It stands out for its ability to perform laboratory and remote onsite analyses by cleaning the sample surface, requires minimum to no sample preparation, handles all sample types, scanning width/length and resolution (30 to 1000 microns) flexibility and rapid identification of all the natural elements of the periodic table for whole commodity spectrum applicability.

This presentation will summarize the Ecore-LIBS system and its applicability as being the universal scanning solution for the mining industry. The Ecore delivers a high-resolution optical photo 50 microns per pixel, quantitative automated mineralogy and elemental compositions, calculated specific gravity and hardness, lithological characterization almost in real-time. By leveraging AI algorithms and automation, it can scan hundreds of meters of core or chip samples, providing detailed elemental fingerprints, SEM-EDS quality mineralogy, alteration information, and ore and gangue grain size distributions, textures and associations for paragenesis and metallogeny. This critical information can then be seamlessly integrated into the exploration, domain/subdomain for resource/reserve, QA/QC, and geometallurgy-mill aspects resulting in cost and time savings, optimized decision making and project derisking and higher NPV.