

SEG 2026 Conference in Salt Lake City, United States

Nevada Gold Mines: Our Journey From Yesterday Into Tomorrow - Adoption of the PhotonAssay™

Joseph Becker

The presence and quantity of gold in rock has been measured by fundamentally the same technique that was invented thousands of years ago and has largely remained unchanged for the last 500 years – The Fire Assay. Fire assay uses a series of complex physical and chemical reactions to separate the gold from the rock so it can be quantified. This process is considered both a science and an art, requiring experience and skillful adaptation of the process. The groundbreaking Chrysos PhotonAssay™ technology is a newly developed, physics-based technology that allows for the direct measurement of gold on an atomic level. This technology works by bombarding rock samples with high-energy gamma radiation to temporarily excite the gold atoms temporarily. As the gold leaves this excited state, it releases a signal that is used to measure the concentration of gold through a simply calibrated linear relationship. Due to the vast differences between these old and new methods, there are many important aspects to consider as Nevada Gold Mines, and the industry as a whole, adopt this innovative technology. This talk will delve into a variety of observations regarding PhotonAssay™, including the preliminary validation of the method, initial research and development, fire assay to extinction, rationalization of the difference between assay techniques, process test work, QA/QC performance and new procedures, and commentary about the future of QA/QC.