CHRYSOS
PhotonAssay™
Faster, more accurate gold analysis

Chrysos PhotonAssay™

February 2024 Update

Outline

- Introduction
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  - Chrysos PhotonAssay™ overview
- PhotonAssay™ deployments and customers
- Validation
  - Performance
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- Coarse gold – the PhotonAssay™ advantage
- Summary

Introduction

Gold assay challenges

- Gold analysis presents unique challenges
  - Commercially important samples extend to very low grades
  - Ore heterogeneity often presents significant sampling difficulties

- Traditional chemical assay e.g. fire assay
  - Requires extensive sample preparation
  - Measures a small volume of material
  - Is time-consuming and labour intensive
  - Is destructive (sample cannot be re-assayed)
  - Presents OHS & environmental concerns

Delivering faster, safer, and more accurate gold analysis, Chrysos PhotonAssay™ is an environmentally-friendly replacement for fire assay on-site and in the laboratory

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About Chrysos PhotonAssay™

Delivering faster, safer, and more accurate gold analysis, Chrysos PhotonAssay™ is an environmentally-friendly replacement for fire assay on-site and in the laboratory.

Hitting samples with high-energy X-rays, the technology causes excitation of atomic nuclei allowing enhanced analysis of gold, silver, copper and other elements in as little as two minutes.

Through rapid turnaround on high sample volumes, PhotonAssay™ provides timely quantitative data, drives optimisation through the value chain, and delivers the **operational outcomes that matter to miners**.

Quantitative results in as little as 2 minutes

More than 6.5 million samples processed to date

Operating across 3 continents

Note: sample quantity as of February 2024

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PhotonAssay™ technical features

- True bulk measurement of large samples, typically 400-650 g
- Minimal sample preparation e.g. crush to 2-3 mm top-size
- Non-destructive; no chemical reagents required
- Rapid (< 2 mins per sample, 70 samples/hour)
- Excellent sensitivity (0.01 ppm detection limit on reagent blanks 0.015-0.030 on typical gold ores)
- Independent of sample matrix, chemistry or mineralogy
- Fully-automated

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PhotonAssay™ process overview

Step 1
Crushed sample loaded into jars and scanned into unit by operator

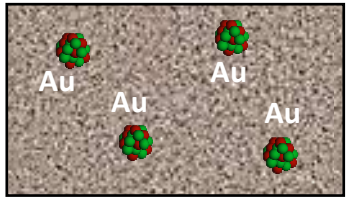
Assay process takes < 2 min

X-rays

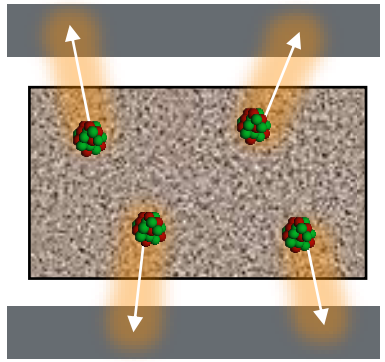
Step 2
Automated high-energy X-ray analysis activated and detectors gold atoms

Measurement and analysis

Results to LIMS



Activation of gold



Recycle for higher precision

Step 3
Automated reporting. Sample can be retained for future assay or safely disposed of if no longer required

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PhotonAssay™ comparison to fire assay

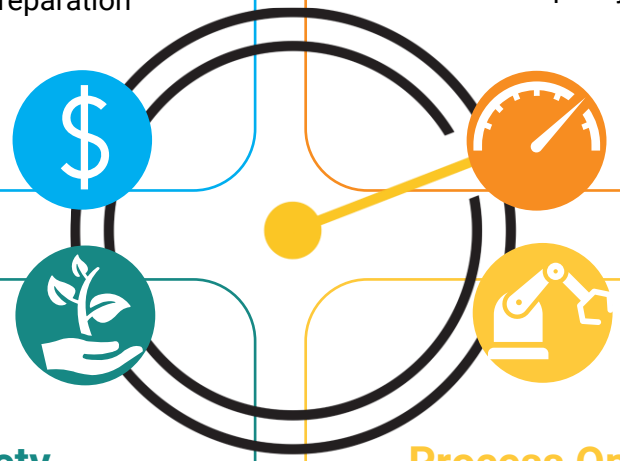
PhotonAssay™ vs. Fire Assay[1]

	Fire Assay	PhotonAssay™
Time per sample	*~3-4 hours*	***~2 minutes*** ✓
Sample size	*10-50 grams*	***400-650 grams*** ✓
CO_2 per sample[2]	*0.91 kg*	***0.455 kg*** ✓
Hazardous waste per sample	*0.31 kg*	***0 kg*** ✓
Energy use per sample[2]	*~1.3 kWh*	***~0.65 kWh*** ✓
Automation	✗	✓

PhotonAssay™ value delivered

Lower costs
Simple to operate
Minimal consumables
Reduced sample preparation

Faster turnaround
Results in 2 minutes
Quasi real-time analysis
Continuous quality assurance



ESG and Safety
No hazardous waste
Lower CO_2 emissions
Improved OH&S

Process Optimisation
Non-destructive analysis
Automated
Opportunity to improve recovery

1. Comparison of PhotonAssay™ and Fire Assay per Frost & Sullivan industry report
2. Assumes same energy/electricity source is used for both methods

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PhotonAssay™ environmental benefits

PhotonAssay™ delivers faster, safer, more accurate and environmentally-friendly analysis of gold, silver, copper and other elements. The technology has rapidly displaced slower, more hazardous and costly processes to become the mining industry's most innovative and valuable assaying solution.

Chrysos puts science in technology to make **technology that matters**

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Deployments and Customers

PhotonAssay™ installation example

Example installation – Perth, Western Australia

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PhotonAssay™ reach

○ Offices & Manufacturing ● Regions with PhotonAssay™ enquiries ● Deployed or installing regions

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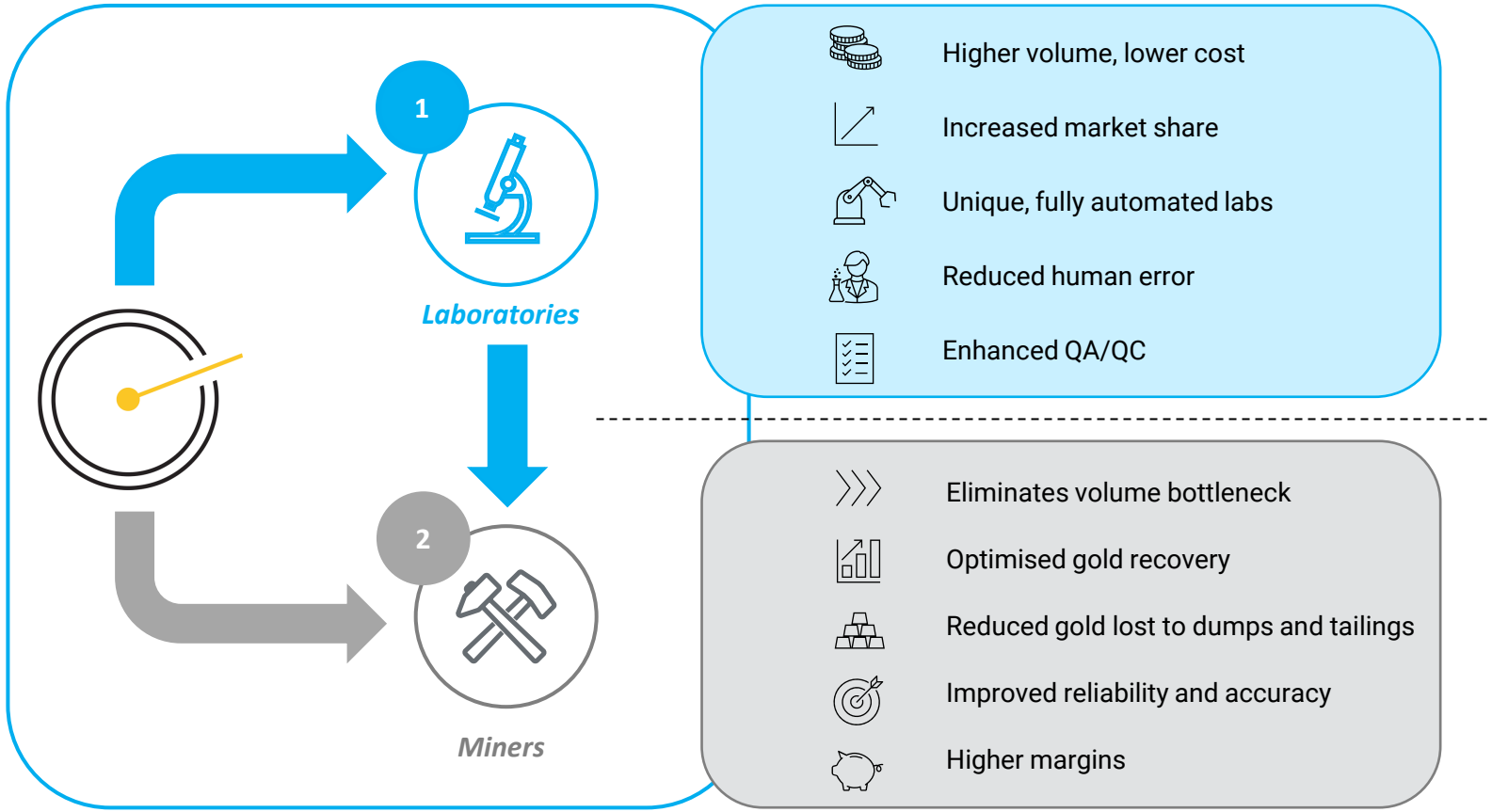
PhotonAssay™ value proposition



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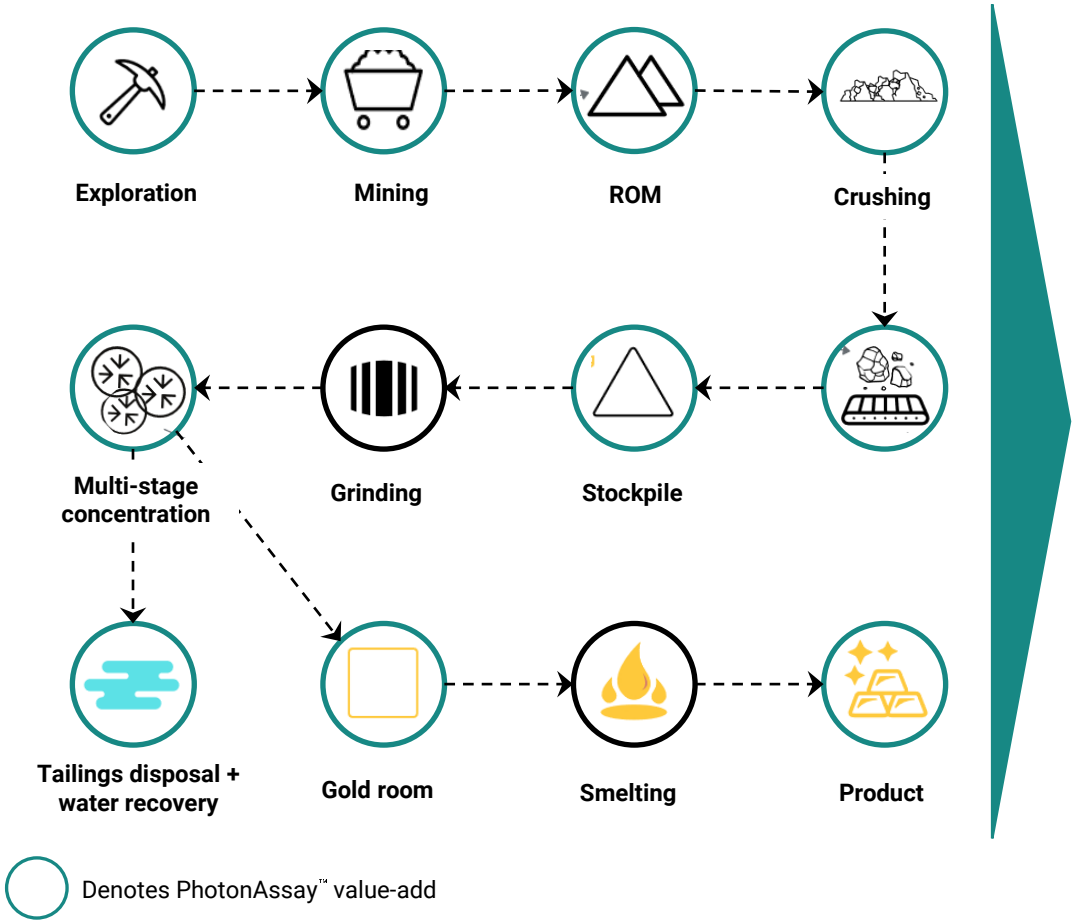
PhotonAssay™ through the mining value chain

Operating context

- Each year global miners lose >$2.0 billion worth of recoverable gold
- PhotonAssay™ is a revolutionary solution potentially allowing for a 1-3% improvement in gold recovery through the value chain
- Provides customers with potential productivity gains of >$1 million per annum and potentially >$25 million for larger miners

PhotonAssay™ value through the mining value chain



PhotonAssay™ Value Add	
Exploration Mine	Fast turnaround for mine planning and scheduling in-pit
ROM Crushing	Assay-supported blending between pit & processing
Stockpile	Stockpile sampling & optimised gold recovery
Multi-stage concentration	Reduction in process reagents & consumables
Tailings + Water recovery	Tailings grade monitoring
Gold room	All samples retained for QA/QC
Product	Buyer / seller assays

Source: S&P 2020 Global Gold Production
Note: Chrysos is targeting mines producing >$100m per annum gold revenue (ie. 40koz per annum producers at current gold price). 1-3% improvement in recovery would therefore lead to productivity gains of >$1m per annum

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Customer feedback

"PhotonAssay has been a real winner for us…our turnaround times for gold analyses are a quarter of what the rest of the industry is experiencing at the moment."

Novo Resources, "Growth The Exploration" presentation webinar, February 2022

"I would like to express my excitement for receiving our first batch of Chrysos PhotonAssay results. Advancing our use of this technology is a pivotal move that will be better for the environment, decrease assay turnaround times and reduce costs."

Melissa Render, VP Exploration, New Found Gold Corp. January 2022

"We believe Chrysos can offer simple sample preparation, fast turnaround times for high-quality results, and improved outcomes related to health, environment, and the community."

Wess Edgar, Chief Geologist, Kirkland Lake Gold (Australia), August 2020

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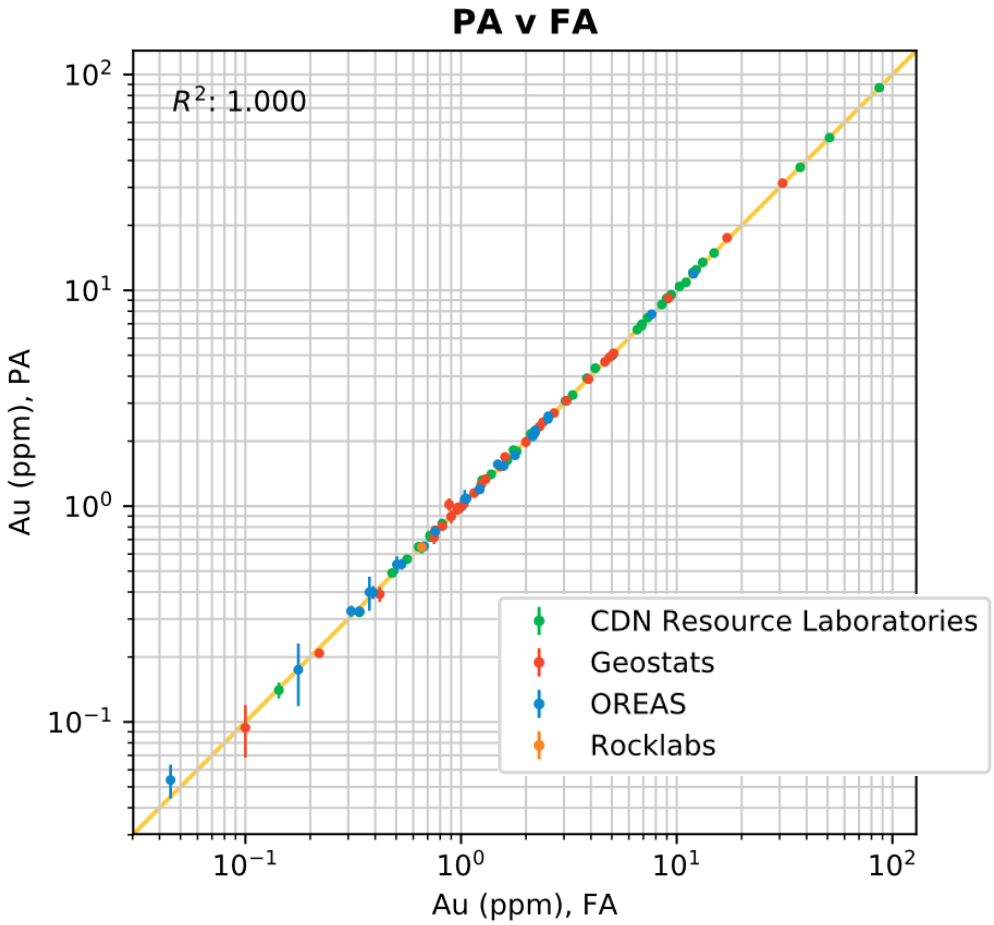
Technical Validation

Gold validation on CRMs

- Detection limit of 0.01 ppm on reagent blank materials
  - 0.015-0.03 ppm on typical ores, depending on U, Th, Ba content
- Example CRM performance: test on 94 gold reference materials from 4 commercial providers
- Excellent correlation 0.03 – 100 ppm (R^2 = 0.99994)
- Testing on carbon pulp CRMs validates up to ~8000 ppm



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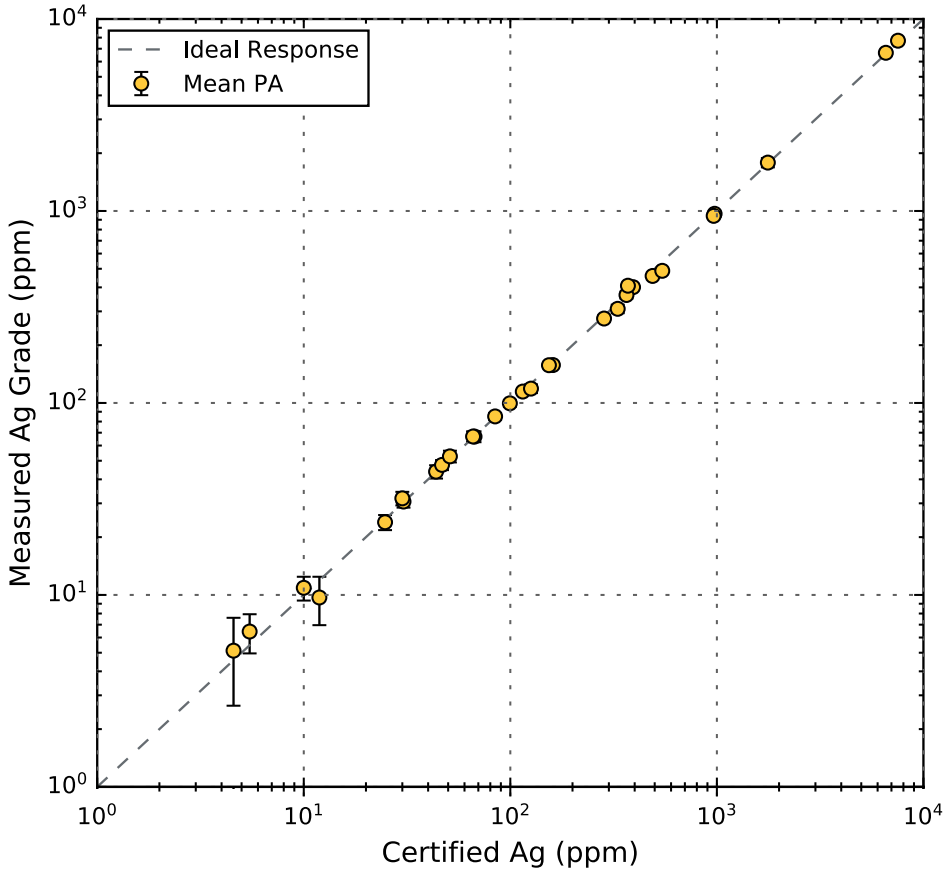
Silver validation on CRMs

- Can be measured simultaneously with gold in most materials
- Example CRM performance: test on 38 reference materials from 5 commercial suppliers
- Excellent correlation 5 – 8,000 ppm (R^2 = 0.99994)
- Detection limit for reagent blanks and typical ores
  - 4 ppm for standard ‘gold-optimised’ machine settings
  - 1.5 ppm for ‘silver-optimised’ machine settings



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PhotonAssay™ certified CRMs

- CRM manufacturers always recommend that method-specific grades and uncertainties (SDs) be used

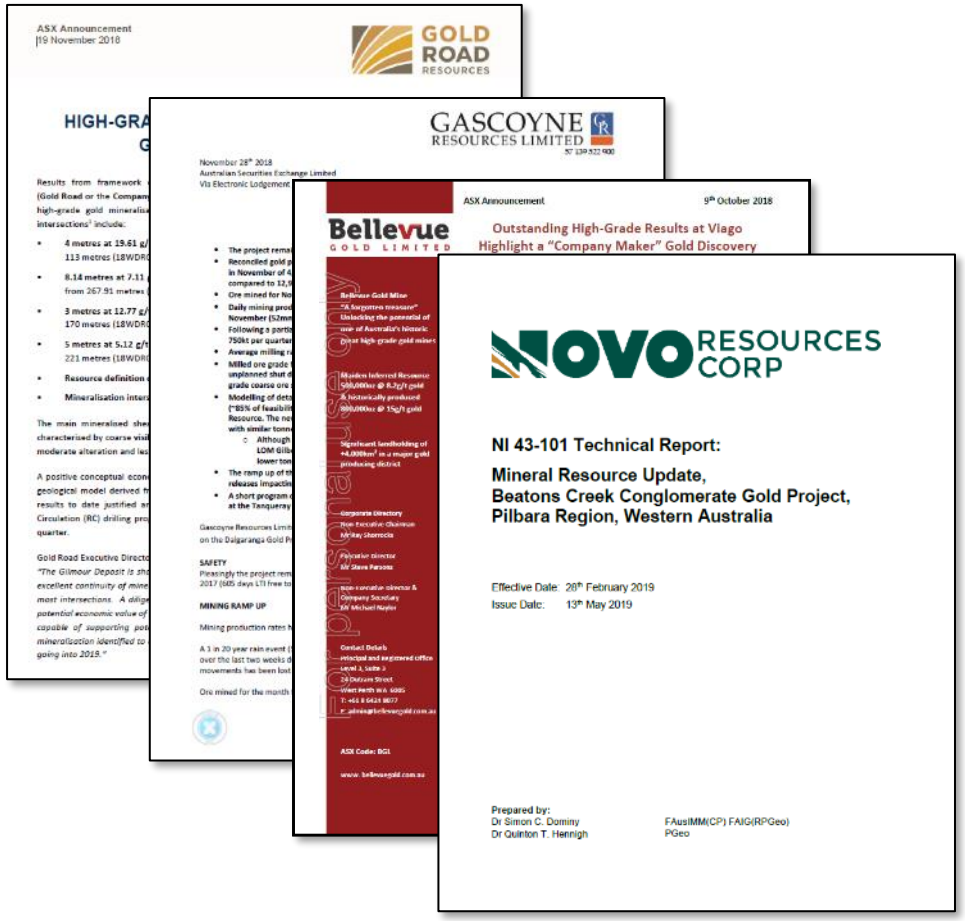
- OREAS now provides 21 materials with recommended or certified PhotonAssay™ gold grades and uncertainties
  - Certification recently updated with improved confidence intervals
  - Validated through round-robin on multiple machines
  - Grade range 0.31 – 92 ppm

- Chrysos internally certified grades and uncertainties available of materials from multiple manufacturers
  - Technical notes TN-01 and TN-03 are available on request

NATA accreditation and JORC/NI43-101

- PhotonAssay™ units operating in multiple laboratories accredited by the National Association of Testing Authorities to ISO/IEC 17025

- PhotonAssay™ grade results used in numerous resource reports deemed compliant with:
  - JORC code
  - NI43/101



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Coarse Gold Analysis

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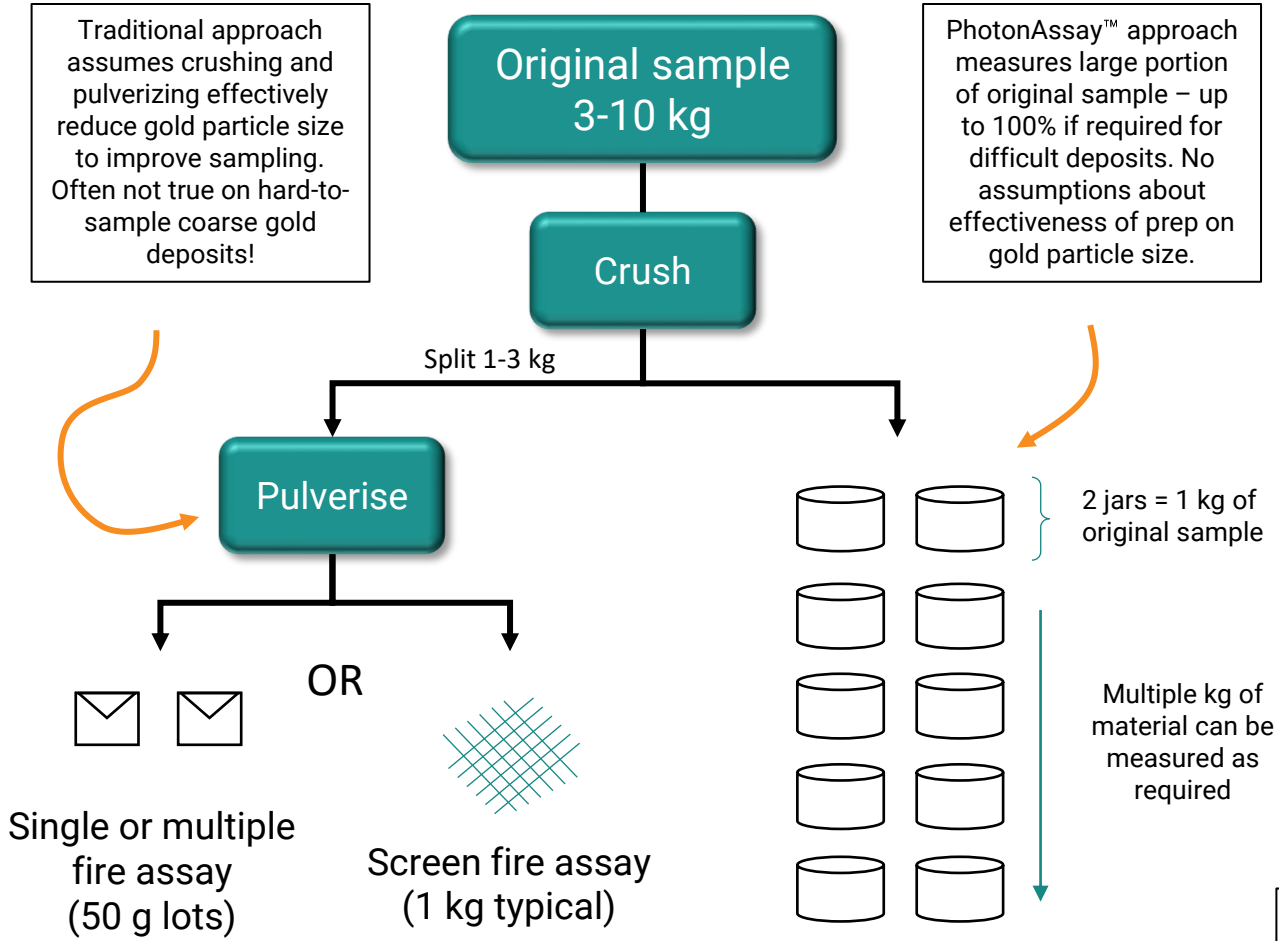
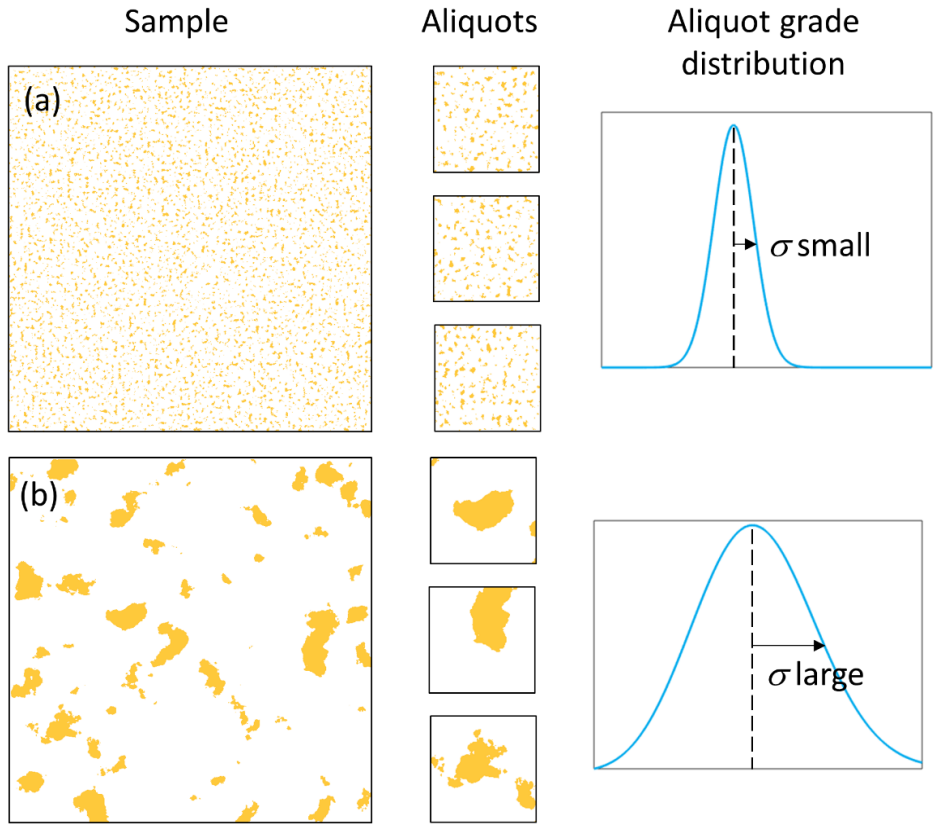
General ore sampling – coarse gold challenge

Traditional approach assumes crushing and pulverizing effectively reduce gold particle size to improve sampling. Often not true on hard-to-sample coarse gold deposits!



PhotonAssay™ approach measures large portion of original sample – up to 100% if required for difficult deposits. No assumptions about effectiveness of prep on gold particle size.



(a) Top - for finely disseminated gold, small sample sizes have acceptable sampling errors
(b) Bottom – with coarse gold deposits, large sample sizes are required to produce reasonable sampling errors unless gold particle size can be reduced during sample prep

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Customer feedback

"Recognising the nuggety nature of gold mineralisation at Queensway, the use of non-destructive Chrysos PhotonAssay on whole-core samples will contribute significantly to optimising the accuracy of our assay results."

New Found Gold Corp. November 2021

"PhotonAssay will give us a much better estimation of true gold grade in our drill core as the sample method removes bias created during the sample preparation in traditional assay methods."

Benz Mining Corp. July 2021

"This award-winning technology is capable of rapidly and accurately scanning up to 500g of material at a time, an important capability when dealing with coarse gold systems."

Novo Resources, Operational Update, October 2020

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Summary

Summary

- PhotonAssay™ is a compelling alternative to traditional methods
  - Rapid, safe, accurate, automated, cost-competitive
- Rapidly growing industry adoption
  - Operating across 3 continents
  - Use in JORC and NI 43-101 compliant reports
  - Commercial PhotonAssay™ certified reference materials
- Larger sample size advantageous for coarse gold deposits
  - PA on crushed ore outperforms FA on pulverised ore
  - Easy to amalgamate results across jars: 2 kg, 5 kg, 10 kg aliquots
- Method of choice on challenging deposits

About Chrysos Corporation

Chrysos Corporation combines science and software to create technology solutions for the global mining industry.

With staff across Australia, North America and Africa, Chrysos' team of scientists, engineers and industry specialists blends innovation, technical expertise and superior customer service to create cutting-edge assay technologies and services that deliver the crucial operational data customers need to achieve better business outcomes.

Originally developed at Australia's national science agency, CSIRO, the company's flagship product PhotonAssay™ delivers faster, safer, more accurate and environmentally-friendly analysis of gold, silver, copper and other elements. The technology has rapidly displaced slower, more hazardous and costly processes to become the mining industry's most innovative and valuable assaying solution.

Chrysos puts science in technology to make **technology that matters**.

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Thank you

T +61 8 7092 7979

E info@chrysoscorp.com

W photonassay.com

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