

## Applied Diamond Services

SRC Geoanalytical Laboratories Diamond Services has provided the international diamond industry with dependable kimberlite exploration services for over 25 years, including:

- Micro diamond extraction by caustic fusion
- Recovery and secure sorting of macro diamonds at our kimberlite mini-bulk sample plant
- Kimberlite indicator mineral (KIMs) processing and observation

Building on our core expertise, the lab is continually improving services and expanding its capacity. We offer an extensive range of services that are unique to the Canadian market, which provides convenient processing for diamond companies. Our lab is the only place in Canada that characterizes diamonds for recovery attributes, such as:

- Luminescence intensity or decay time responses to X-ray irradiation
- Magnetic susceptibility (responses) when subjected to magnetic separation
- Hydrophobicity when subjected to grease recovery
- Laser Raman when assessing automated final sorting

*We offer expertise and services throughout every stage of your exploration and processing programs. Our facility evaluates and audits all recovery and processing technologies. Tests can be varied based on individual client requirements.*

### Quality

SRC Geoanalytical Laboratories is accredited to the ISO/IEC 17025 standard by the Standards Council of Canada as a testing laboratory for specific tests.



### Security

All diamond work is carried out in a high-security facility monitored by 24-hour video surveillance and security personnel. Access to this facility is limited and controlled, and prior arrangements are required for any viewings.

### Shipping/Receiving

All shipping and receiving is tracked through a chain of custody process to ensure accountability throughout. All necessary permits and export applications, including Kimberly Process Certificates (KPC), can be produced by SRC.

## Services

### Diamond Recovery and Grade Assessment

- Processing mini-bulk samples from exploration or mine sites
- Processing concentrate from dense media separation
- Diamond recovery using comminution, DMS, magnetics, X-rays, grease, caustic fusion and hand-sorting
- Sieve classification by square mesh, DTC and Pierres sieves
- Rough stone descriptions based on classification scheme

### Digital Photography

- High-resolution macro photography of diamond parcels
- Geologic groupings, layouts and recovery comparisons

### Breakage Studies

- Examination of diamond surfaces by microscope and SEM
- Diamond reconstruction from matching fragments
- Estimation of original diamond size and percent loss

### Diamond Typing, Color and Shape Classification

- Nitrogen, boron, hydrogen contaminant analysis by microscope FT-IR
- Diamond typing from N-data (IaA, IaB, IaAB, Ib, or II)
- Objective gemological colour classification
- Diamond shape classification

### Diamond Inclusion and Xenolith Studies

- Analysis of silicate/oxide and sulfide inclusions
- FT-IR analysis of host diamond
- Xenolith thin sectioning for major- and trace-elements
- Texture imaging and mineral associations using QEMSCAN®

### Size Frequency Distribution

- Estimation of largest diamond size for a kimberlite facies
- Calculation of large diamond sizes for equipment selection

### X-ray Luminescence Measurements

- Luminescence intensity response of diamonds and minerals
- Luminescence decay times of diamonds and minerals
- Determination of X-ray recovery parameter settings

### Densimetric Analysis

- Calculating percent sinks at various densities and sizes
- Quantifying misplaced material of dense media separation
- 3 Curve density analysis of dense media separation

### Magnetic Concentration

- Evaluation of magnetic material in a process stream
- Verification of the occurrence of any magnetic diamonds

### Grease Recovery

- Evaluation of diamonds recovered on grease for each size fraction
- X-ray characterization of grease recovered diamonds

### Liberation Analysis

- Assess non-liberated diamonds for different comminution parameters using caustic fusion
- Granulometry for each liberation process; jaw crushing, cone crushing, High-Pressure Grinding Rolls, scrubbing

### Laser Raman

- Laser Raman measurements on diamonds for diamond sorting
- Laser Raman measurements on gem minerals for additional mineral recovery

### Audits

- Technical audit of process equipment and operations
- Audit of plants for overall recovery efficiency

### Environmental Support

- Characterization of kimberlite composition for stockpile leaching
- Process water analysis for recycling and containment planning
- Determination of percentage clays and grits produced per kimberlite facies
- Settling tests of -1 mm material and clay analysis by XRD