***Curriculum Vitae***

**Geoffrey R. Lane**

**Professional Experience:**

**Process Mineralogical Consulting Ltd. January 2010 to present**

**Vancouver, B.C., Canada**

# *President / CEO*

* Owner and operator conducting mineralogical investigations for mineral processing test work and plant optimization.
* Assisted in the development of the Tescan Integrated Mineral Analyser to carry out automated mineral identification using a Scanning Electron Microscope and integrated Energy Dispersive X-ray spectra.
* Managing mineralogical projects that include conducting TIMA (Tescan Integrated Mineral Analyzer) data interpretation and predicative mineral processing calculations for junior mining companies and process engineers.
* Completed elemental mineral analyses using Oxford INCA Semi-Quantitative Energy Dispersive X-ray spectrometry determining major and minor elemental contents of tetrahedrite, sphalerite, apatite, gold, silver and platinum group metals.
* Carry out optical mineralogical studies in both transmitted and reflected light.
* Effectively present mineralogical data to geologists, engineers, and business managers through written reports, summary sheets and PowerPoint presentations at local and national conferences.
* Conduct mineral separation tests using magnetics, heavy liquid, Superpanner and elutriation techniques to enhance mineralogical investigations.
* Designed, built and assembled a competitive mineralogy laboratory containing state of the art equipment and innovative application software integrated with proven mineral separation and processing equipment.

**ALS-Chemex April 2009 to January 2010**

**Vancouver, B.C., Canada**

# *Manager Mineralogical Services*

* Manager initiating development of the new Mineralogy department within ALS-Chemex Vancouver.
* Created and executed a business plan and strategy to build a foundation of clients for a profitable business.
* Mineralogy team leader undertaking method development, training, scheduling, laboratory planning, and capital acquisitions.
* Managed mineralogical projects including the supervision, budgets, deadlines, technical project development, manpower and resources.
* Educated and trained staff to understand the basics of mineralogy and the procedures involved in carrying out testwork.
* Supervised the installation of the Mineral Liberation Analyser (MLA)
* Managed staff and resources to provide efficient operation of MLA to maximize turnaround and provide quality results.
* Carried out MLA operation and data interpretation
* Conducted mineralogical investigations using the MLA and optical microscope for clients including geologists, and metallurgists.
* Presented mineralogical information to promote exposure of ALS Mineralogical services.

**Rio Tinto – Technology & Innovation Jan 2007 to April 2009**

**Melbourne, Victoria, Australia**

# *Senior Advisor (Mineralogy) – Process Mineralogy Team Leader*

* Process mineralogy team leader assisting in method development, training, scheduling, laboratory planning, and capital acquisitions.
* Senior Mineralogist managing mineralogy projects including the supervision of technicians, and junior mineralogists, setting project budgets, technical project development, manpower and resources.
* Business development of projects that add value to Rio Tinto business units through discussions with geologists, metallurgists, and Regional General Managers. Completing proposals and reporting and presentations detailing project status and major findings. Developed business revenue to >$1,000,000.
* Completion of mineralogical analysis operating optical petrographic microscopes, QemSCANs, SEM instrumentation, and XRD to determine mineral chemistry and analytical chemistry to characterize Rio Tinto exploration projects and metallurgical operation expansions, providing technical reports and presentations in a timely and cost effective manner.
* Effectively present mineralogical data to geologists, engineers, and business managers through written reports, summary sheets and presentations.
* Completed QemSCAN operation, data validation and quality control methodology in order to apply quantitative mineralogical techniques to various Rio Tinto core projects. Use of software such as iDiscover, iMeasure, SIP editor, Excel, Word, Powerpoint, XRD interpretation software (PANalytical X’pert).
* Integrated into project teams with Metallurgical Engineers, and geologists to trouble-shoot mineralogical constraints in processing flowsheets and resource characterizations.
* Successfully integrated mineralogical analysis into ore body knowledge programs providing valuable key indictors to characterize initial exploration data.
* Planned laboratory facilities to integrate X-ray diffraction, SEM-EDS technology to incorporate equipment to Bundoora (Australia) from lab closure in Bristol, UK. Technical expert in charge of X-ray diffraction (PANalytical XRD) and SEM-EDS (Leo 1455) and Oxford Isis quantitative EDS analysis software.

**SGS Mineral Services - Lakefield Research Limited Nov 1987 to Dec 2006**

**Lakefield, Ontario, Canada**

## Senior Mineralogist (2004 - 2006) Advanced Mineralogy Facility - SGS Mineral Services

## Project Mineralogist (1996-2003) Lakefield Research Ltd.

* Senior Mineralogist managing mineralogy projects to optimize client satisfaction and project profitability. This included the supervision of technicians, junior and contract mineralogists, setting project budgets, technical project development, manpower and resources.
* Assisted the Manger of Mineralogy conducting revenue evaluations, capital assessments, employee evaluations, interviews, and cost analysis. Process Mineralogy Group leader managing Consulting, Project and Junior Mineralogists.
* Managed many mineralogy projects that include size by size mineralogically limiting liberation analysis, mineral association, and complex mineral identification including interpretation for impact on mineral processing test work.
* Developed business for mineralogical laboratory to >$500,000/year. Attended conferences and meetings presenting technical papers that increased exposure to SGS and development of new business.
* Integrated into project management teams with Metallurgical Engineers to trouble-shoot mineralogical constraints in processing flowsheets.
* Effectively present mineralogical data to geologists, engineers, and business managers through written reports, summary sheets and PowerPoint presentations. Responsible for quality and timely completion of technical reports.
* Predictive metallurgical interpretation of mineralogical data obtained from QemSCAN and optically based systems of head material, flotation and other mineral processing products.
* Conducted process mineralogical studies detailing ore mineral textural characteristics that influence product grade and recovery and ore mineral liberation, characterization and mineral chemistry of feed material for predictive metallurgical assessment as well as ore variability determination from geological sampling.
* Developed and implemented image analysis routines using optical image analysis software, for base metal liberation determination including mineralogically limiting grade recovery and mineral release evaluation. Initiation of multi-spectral imaging for advanced optical image analysis.
* Developed and implemented new Resistate Indicator Mineral analysis procedures including mineral processing techniques and mineral chemistry criteria for ore deposit exploration of Cu-porphyries such as apatite and rutile.
* Developed new dye penetration techniques using column leaching and mineralogical analysis for the determination of the leachability correlated with metal recovery and rock micro-structural characterization.
* Carried out mineralogical investigations on diverse ore types, which include the use of optical microscopy, Scanning Electron Microscopy (including QemSCAN), Electron Microprobe, powder X-ray Diffraction, and chemical analysis.

**Dome Exploration (Canada) Limited, Pickle Lake, ON 1987**

*Geological Assistant*

* Completed reconnaissance geological mapping and sampling, checked and verified claims between two gold showings
* Performed detailed mapping and sampling for gold mineralization on gold showing in Northern Ontario.

**Ministry of Natural Resources of Ontario, Fonthill, ON 1985**

*Geological Technician*

* Sampled, measured and characterized stratigraphic facies of the Lockport and Onadaga formations of Southern Ontario for aggregate potential.
* Completed abandoned quarry inventories and inspections in the Niagara Region
* Inspected operating pits and quarries for perimeter compliance (fences & berms).

**Education and Professional Affiliations / Training:**

* Licensed Member of the Association of Professional Engineers & Geoscientists of British Columbia (A.P.E.G.B.C.)
* Bachelor of Science Degree, Second Class Upper Division Honours, Geological Sciences, Birkbeck College, University of London, England, 2005
* Minerals Engineering Technologist Diploma, Sir Sandford Fleming College, 1987
* Recipient of the Mineralogical Association of Canada Award, 1987
* Geological Technician Diploma, Sir Sandford Fleming College, 1986

 **Publications:**

* The Effects of Nuggety Gold on Gold Deportment – Lessons from Beaton Creek Paleo-Placer Gold Project, Australia, Lane G.R., McComb M., Proceedings of Canadian Mineral Processors Conference 2015, January, 2015
* Characterisation of Heap Leach Ores using Dye Penetration and Mineral Analysis, Lane G.R., Proceedings Heap Leach Conference, September, 2013
* Techniques and Applications for Predictive Metallurgy and Ore Characterisation using Optical Image Analysis, Lane G., Martin C., Pirard E., MEI Automated Mineralogy 07, Minerals Engineering June, 2008
* Dye Penetration Techniques Used to Determine Heap Leach Potential of a Telluride bearing Cripple Creek Breccia Ore, Lane G.R., Jahraus M., Melker M., 38th Annual Canadian Mineral Processors Conference, Conference Proceedings, January, 2006,
* Quantitative Inventories of Single Total Heavy Mineral Products using Combined Mineralogical Methods Lane G. and Hamilton C., Heavy Minerals Conference, Society of Mining, Metallurgy and Exploration, Jacksonville Florida, Conference Proceedings, October, 2005
* The Comparison of Residual vs. Carbonatitic Apatite Associated with the Cargill Carbonatite Complex, Kapuskasing, Onatrio, Canada, Lane G.R., unpublished undergraduate thesis, Birkbeck College, University of London, 2005
* Dye Penetration / Column Leach Analysis – A Method of Ore Characterization, Lane G.R., Lakefield Research Technical Note: Vol. 8 #2, February, 2002
* Ore Deposit Indicator Mineral Micro-Prospecting for Porphyry Copper Deposits, Lane G. R. and Jago B.C., Lakefield Research Technical Note: Vol. 8 #1, May, 2000

**Project Experience**

Agnico Eagle (Laronde), Agrium Phosphate AngloGold “Colorado” Corp., Anglogold-Ashanti, Atzlan Exploration Barrick, BetzDearborn Inc. Cabot Mineral Development, Caldera Resources, Canadian Royalties, Capstone, Cerro Matosa, Dryvit Systems, Dupont, DynaTec, Energy Resources Australia, Entrée Gold, Freeport McMoran Gold, Goldcorp, Hamersley Iron, Happy Creek Minerals, Hard Creek Nickel, Heemskirk Canada, ICO Minerals, Iron Ore Company of Canada, ILUKA Resources, INMET, Kaevener Metals, Kilborn, Kinross, Kobe Steel, Kutcho Creek, La Granja Copper, Luzenac, Massena Metals, Medallion Resources, Midas Gold, Mirasol Resources, Mount Polley Mines, Noranda, Newfoundland Pryophylite, Northcliff Holdings Inc, Oregon Resources, Phelps Dodge, Pretium Exploration, SEMAFO, Phelps Dodge, Teck Resources, TrueGold Mining, Shabogamoo Mining, Rio Tinto, Riverstone Resources, Shakespeare SIMSA, Sierra Rutile, Strathcona Mineral Services, Teck Resources, Tiomin Resources, TVI Resources Inc., Vale-Inco, Western Keltic, Western Mining Corporation, Western Inc.