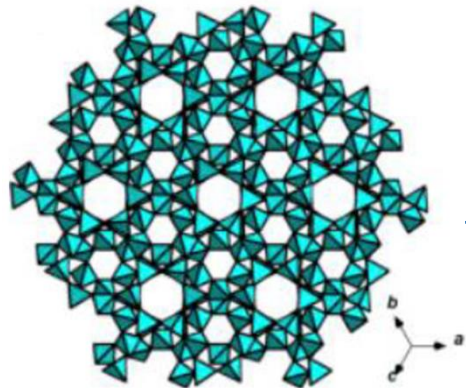




ZMM Canada Minerals Corp.



Advanced Zeolite Materials

**ZMM
Market
Sector:
Specialty
Zeolite
Minerals**



University of Saskatchewan Centre for Cyclotron
Sciences, Saskatoon

The Team at ZMM Canada Minerals Corp.



LuVerne (Verne) E.W. Hogg, Founder, President, Chief Executive Officer

LuVerne (Verne), a geoscientist, is engaged in zeolite exploration, development, production, commercialization and marketing of industrial minerals worldwide. He is recognized as a global expert specializing in applied research and development of zeolite minerals, products and their applications. He has an innate ability to create new zeolite products and solutions for advanced applications.

Verne has been the President and CEO of private and publicly traded mineral companies trading on the Toronto Stock Exchange (TSX) and the TSX Venture Exchange. He is a member of The Canadian Institute of Mining, Metallurgy and Petroleum. His published papers on mineral exploration, research and product development are widely accepted. He specializes new applications using innovative applied research and development, marketing, and sales focussing on natural zeolites.

The Team at ZMM Canada Minerals Corp.



David W.J. McAdam, Chief Financial Officer

David is a highly effective, results oriented, executive, with over 30 years of finance and operations experience in large and small capitalization companies. He has extensive expertise in fund raising, supporting over \$250 million in equity and over \$100 million in debt; financial/operational integration/optimization and measuring; financial planning and analysis; mergers and acquisitions; due diligence; investor relations (TSX.V and JSE); systems strategy, implementation oversight and management; and risk management. David has been the Chief Financial Officer of several public and private companies across various industry sectors, including public and private mining companies - one, a Vancouver based TSX company with producing assets in South Africa and public reporting across the TSX-AIM-JSE and a Fortune 150 waste management/recycling company as VP Operations and Director of Finance.

He holds a Bachelor of Commerce from the University of British Columbia and a Securities Institute of Canada Certificate.

The Team at ZMM Canada Minerals Corp.



**Cheryl V. Hogg,
Corporate
Secretary/Director**

An administrative, communications and HR specialist, Cheryl manages ZMM's administration and corporate reporting requirements.



**Valary L. Schulz
Professional
Geologist/Director**

ZMM co-founder and PGeo., Valary is a recognized expert in petroleum exploitation geology with a mastery in reservoir characterization.



**Thomas H. Charles,
Lands Officer**

Formerly a BC ministry of energy, mines and petroleum resources inspector, Tom is ZMM's government and stakeholder liaison.



**Raymond G. J.
Johnson, Chief Field
Operations**

A field operations expert, Raymond provides 33 years of field experience to ZMM and assists in operations at both ZMM properties.



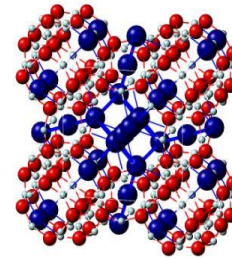
**Jörg T. Gallo,
International
Geologist/Advisor**

With his BSc in geology/paleontology from Goethe University, Frankfurt, Germany, Jörg provides global geological expertise.

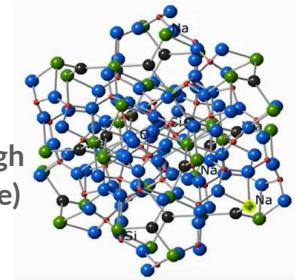
Zeolite Performance Minerals

New Discoveries Creating New Materials and Applications

- 1 Zeolite is a naturally occurring mineral with unique properties that consist of an open, three-dimensional cage-like structure with a vast network of open cavities and channels.
- 2 The channels are occupied by H₂O molecules and cations that are exchangeable. These unique microporous and mesoporous minerals are molecular sieves, adsorbents, and absorbents. They have an extraordinary molecular surface area of approximately 600m² to 800m²/gram.
- 3 ZMM zeolite minerals are crystalline minerals with defined molecular structure. Due to their physiochemical properties they can be engineered for application into an emergent range of specialty products.
- 4 The zeolite orebodies are contained in mafic vesicular basalt of Miocene age. The quality, quantity and purity present in ZMM zeolite is very rare.



Juniper
molecular structure high
purity zeolite (chabazite)

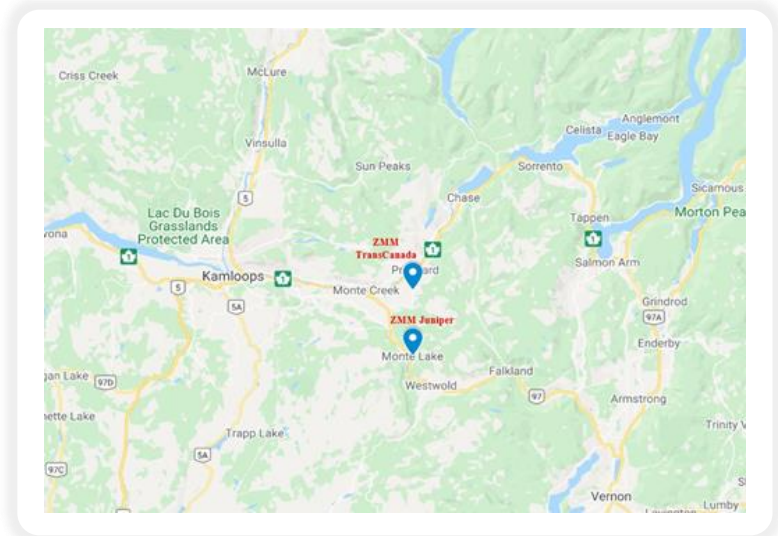


TransCanada
molecular structure high
purity zeolite (analcime)

ZMM Advantages

Highlights

- 1 Logistical** – two high purity zeolite/basalt orebodies in proximity to Kamloops, British Columbia, a major transportation hub in western Canada on the TransCanada Highway and Canadian National and Canadian Pacific rail yards.
- 2 Low-cost surface quarrying** – minimal environmental footprint; conventional processing; no waste – everything quarried has a product classification with no alteration to processing stream.
- 3 Three major targeted market segments** – advanced technology products, environmental remediation products, and consumer products.
- 4 No direct competition in Canada** – for the new high purity zeolite crystal (“HPC”) advanced technology applications.
- 5 Community** - continuous engagement with, and employment of, Canada’s Indigenous Peoples.



Location Zeolite Orebodies

TransCanada Orebody

- 1 Located 32 kms east of Kamloops on Highway 97 (50.62046-119.88651).
- 2 CN and CP rail yards located in Kamloops for intermodal and bulk transport throughout Canada and US markets.
- 3 BC Hydro power lines within 700 meters of the plant site.
- 4 Water supply through collection of rain to cisterns.
- 5 Mine number - 1620039 (BC).
- 6 Permit number - MX-15-165 (BC).
- 7 Lease number - 1096049 (BC).

Juniper Orebody

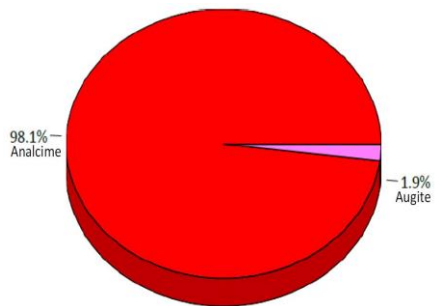
- 1 Located 25 kms southwest of the TransCanada Property on Highway 97 S then onto a timber haul road (50.4409-119.8861).
- 2 Power/water not needed at site as extracted material will be transloaded to TransCanada plant for processing.
- 3 Mine number - 1621717 (BC).
- 4 Permit number - MX-4-734 (BC).
- 5 Lease number - 1096543 (BC).

Breakthrough, Novel Zeolite Technologies

Proprietary Energy Reduction Systems

High purity zeolite for high performance materials, systems, and intellectual properties for Thermal Energy Storage (“TES”) by reversible hydration/dehydration; waste-to-valuable potassium recovery from potash tailings; and nanotechnology applications.

Appendix #1

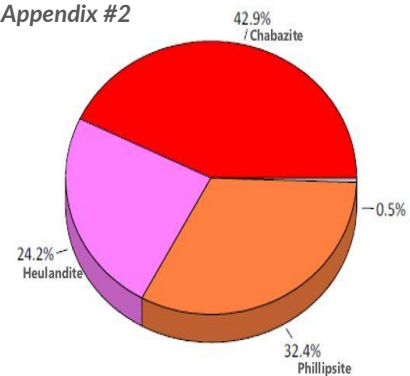


XRD TransCanada high purity zeolite



ZMM High purity zeolite crystals

Appendix #2



XRD Juniper high purity zeolite

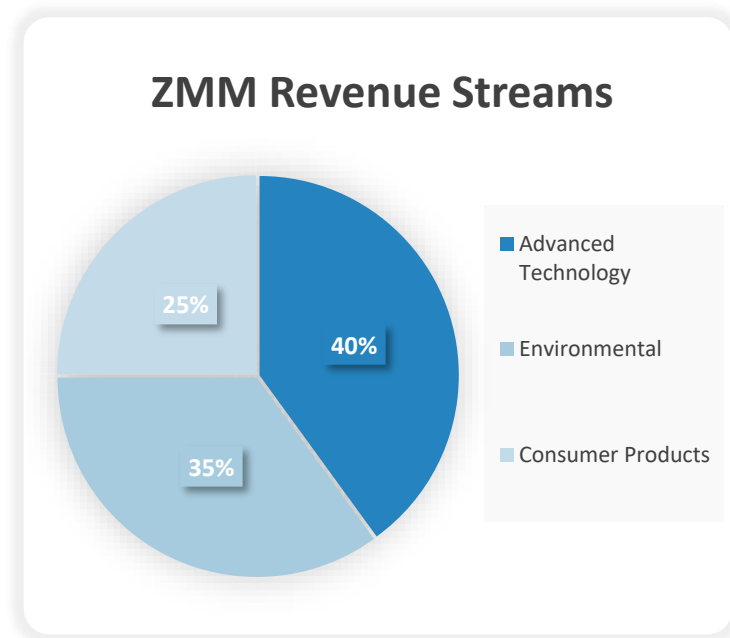
Innovative Zeolite Solutions to Reduce Greenhouse Gas Emissions

ZMM – Creating Novel, Economic Climate Change Solutions

- 1 Development of two high purity zeolite solutions for sustainable environmental applications – the first commercial grade discovery of high purity, crystalline natural zeolites in Canada (*Appendix #1, #2*).
- 2 ZMM conducts innovative, applied research, development and commercialization of zeolite products in collaboration with industry, universities and government agencies, generating proprietary intellectual properties.
- 3 Construction of Canada’s first processing plant to produce high purity zeolite for application as molecular sieves, energy storage, energy reduction, environmental remediation, and biomedical nanotechnologies.
- 4 Utilizing ZMM high purity crystalline (HPC) zeolite for application in next generation Thermal Energy Storage (“TES”) (*Appendix #3*).
- 5 ZMM zeolite solutions for reduction of petroleum and biosolids utilizing ZMM Cold Zone Composting (“CZC”) system (*Appendix #4*); potash tailings innovative waste-to-valorables conversion utilizing ZMM zeolite (*Appendix #5*); Supplementary Cementitious Materials (“SCM”) replacement for encapsulation of radioactive and hazardous wastes utilizing ZMM’s Isolate, Stabilize and Solidify (“ISS”) system.

ZMM Novel Engineered Products

- 1 **Advanced Technology Under Development**
 - a New low-cost Thermal Energy Storage (“TES”) systems can be utilized in cold zones throughout North America.
 - b Potash tailings waste-to-valuables conversion utilizing ZMM zeolite.
- 2 **Market Ready Environmental**
 - a Cold Zone Composting (“CZC”) systems for remediation of petroleum waste year-round in North American northern climates.
 - b ZMM’s Isolate, Stabilize and Solidify (“ISS”) system for remediation of hazardous wastes.
- 3 **Market Ready Consumer Products**
 - a **Agricultural** – Adsorbs/absorbs contaminants in animal feeds.
 - b **Horticulture** – Soil supplement, increases crop yield, retains water.
 - c **Industrial** – Supplementary Cementitious Materials (“SCM”), odor control, traction aid.

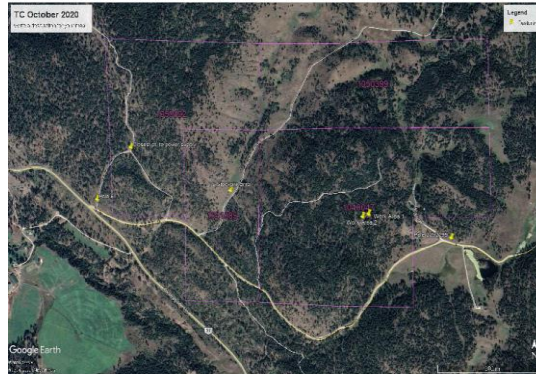


Site and Building Details

ZMM TransCanada zeolite mineral claim area is 226 hectares of which 186 hectare is the lease area, located 20 km from the Kamloops transportation hub. BC Hydro powerlines are situated on the property.

Total CapEx

Field equipment	\$1,950,000
Processing equipment	1,830,000
Building	685,000
Admin/Change trailers	250,000
Support Vehicles	205,000
Scales/storage silos	185,000
Maintenance shed	150,000
Site prep	50,000
Total	5,305,000



Aerial of TransCanada property



Proposed plant site on the TransCanada property

Appendices Follow

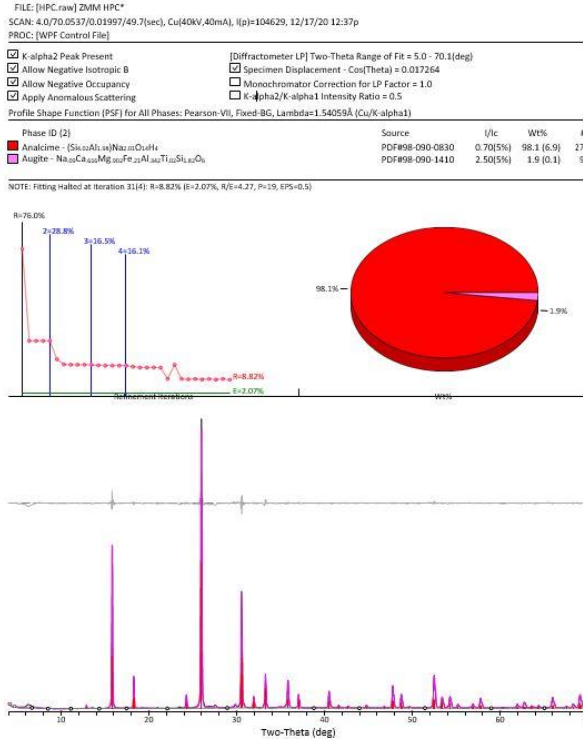


Stockpiling TransCanada Ore at Plant Site

Appendix #1 and #2

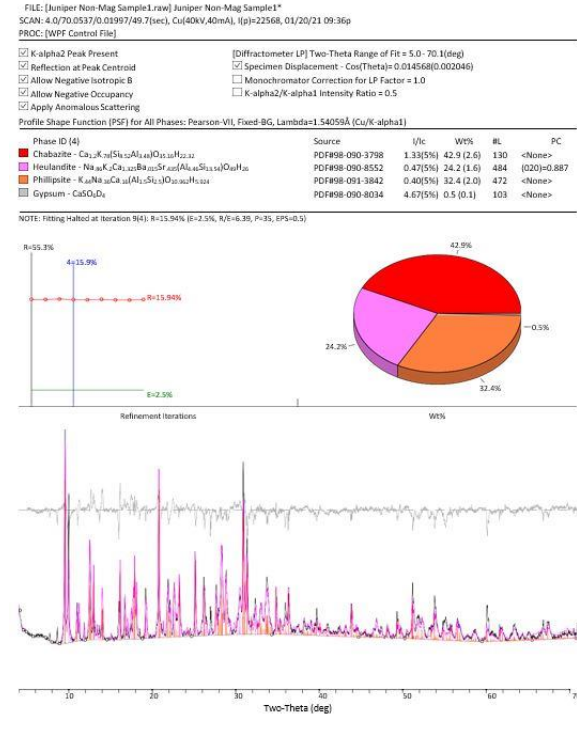
Saskatchewan Research Council

Appendix #1 ZMM TransCanada High Purity Crystals



Saskatchewan Research Council

Appendix #2 ZMM Juniper High Purity Crystals

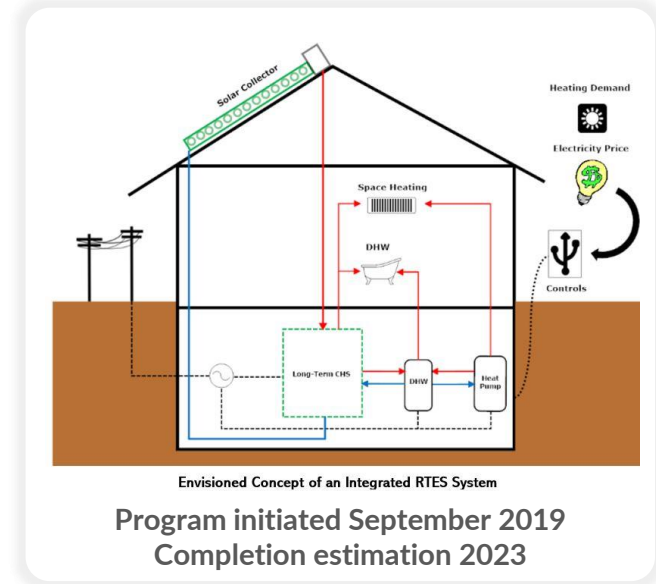


Appendix #3

Thermal Energy Storage Development Initiative

Natural Resources Canada – CanmetENERGY – Utilizing ZMM zeolites as potential host matrices for the development of low-cost, high performance residential thermal energy storage (TES) materials

- 1 Utilizing natural zeolites materials in TES will substantially reduce energy costs and CO2 emissions.
- 2 ZMM zeolites have provided the best performance to date – a technological breakthrough.
- 3 The potential for large-scale electrical grid integration of TES in various electrical jurisdictions is unlimited in the Canadian marketplace.
- 4 https://www.researchgate.net/publication/362825512_Natural_zeolites_as_host_matrices_for_the_development_of_low-cost_and_stable_thermochemical_energy_storage_materials

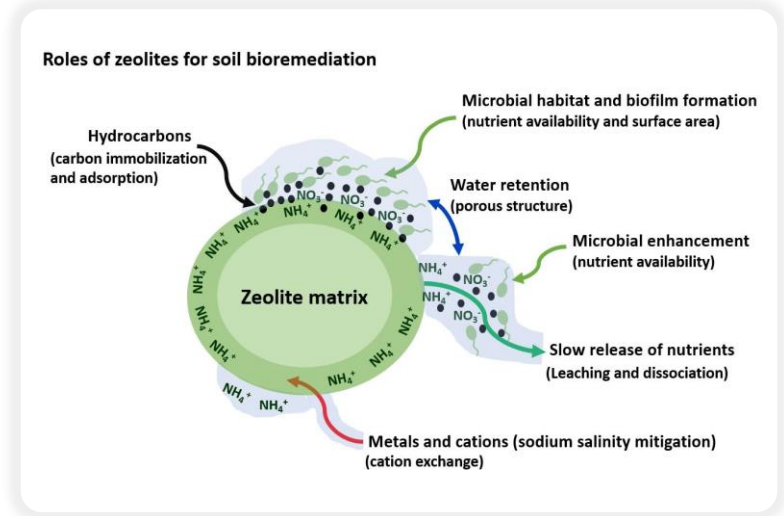


Appendix #4

Cold Zone Composting - Development Complete – Market Ready

University of Saskatchewan – Innovative zeolite based bioremediation strategy for petroleum – contaminated soils in cold climates

- 1 ZMM's zeolite and T-Carbon promote composting of petroleum wastes year-round at extreme temperatures in northern Canada.
- 2 The addition of ZMM materials enhances and increases microbial composting action for stress-tolerant bioremediation of petroleum contamination for up to five months.
- 3 ZMM has a local supply contract for T-Carbon with Tolko Industries.



Appendix #5

Potash Tailings: Waste to-Valuables Conversion Technology

University of Saskatchewan – ZMM zeolites for integrated desalination, nutrient recovery and bioremediation – potash brine-impacted groundwater treatment

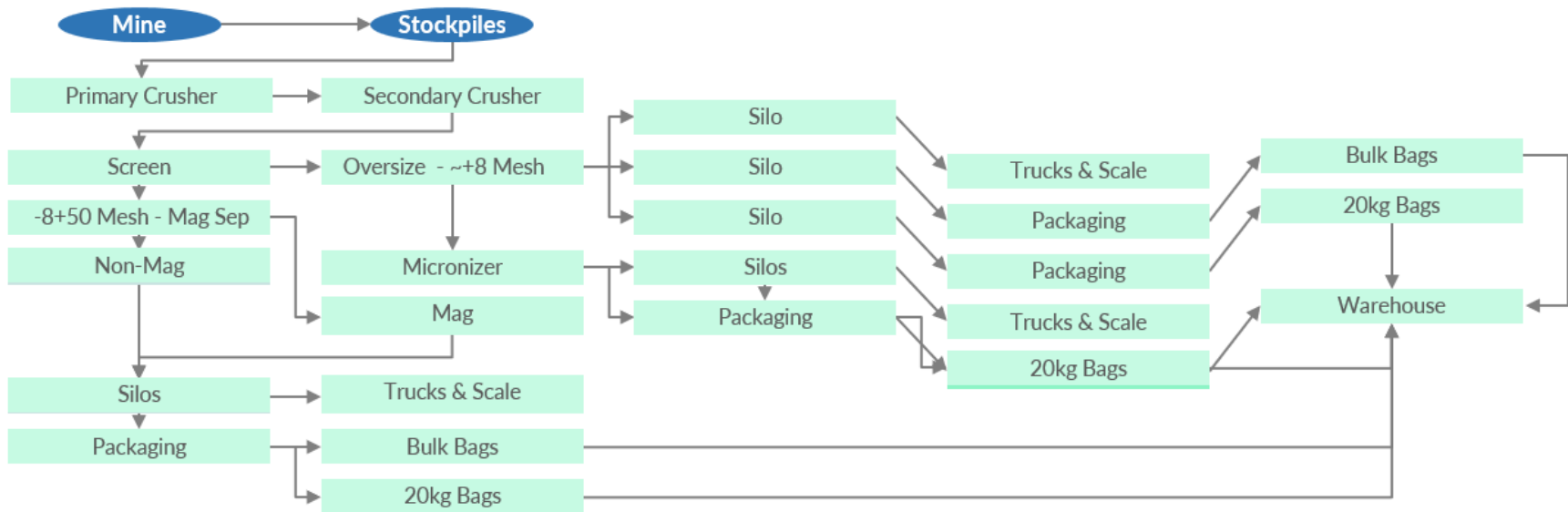
- 1 Groundwater has been negatively impacted in Saskatchewan with over fifty million tonnes of potash waste salt tailings.
- 2 The new, innovative approach at U of S using ZMM zeolite molecular sieves for cation exchange will result in a new system for mitigating the salinity of groundwaters impacted by potash mining effluent wherever these conditions exist and recover potash selectively from salt brine tailings.
- 3 Selective extraction of potassium from the salt brine tailings has been successfully demonstrated. This breakthrough zeolite technology may be utilized for extraction of other minerals in further mineral waste-to-valuables opportunities.



Program initiated September 2020
Completion estimation 2022

Appendix #6

ZMM Canada Minerals Corp. Zeolite Plant Flow Sheet



Appendix #7

Government Financial Contributors to ZMM Applied R & D Projects



Appendix #8

Corporate and University Collaborators

Corporate collaborators



Universities/collages



UNIVERSITY
OF VICTORIA

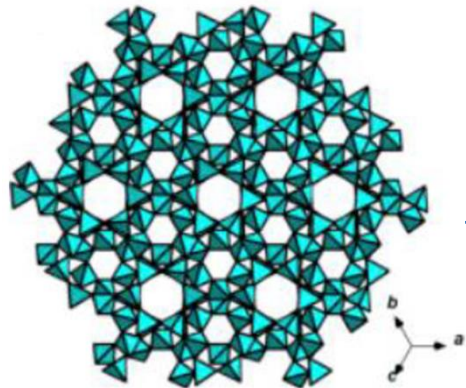


Faculty of Applied Science
UBC Engineering





ZMM Canada Minerals Corp.



Advanced Zeolite Materials

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