

# Lumina Sustainable Materials



Corporate Overview  
2024





# Lumina Overview



# Lumina's Purpose

Lumina is an innovative material science company tackling today's most pressing manufacturing challenges with industry-leading **sustainability**. We develop high-impact products that extend beyond industrial minerals through **custom chemistry** and **processing solutions**.

Our distinct mineralogy and chemistry lead to:

- Reduced **CO<sub>2</sub>** and volatile organic compound (**VOC**) emissions
- Reduced **energy** consumption
- Reduced **material usage**
- Improved end-product **performance** across key parameters

# Lumina's Value Creation

## Mining & Manufacturing

- Lumina has expertise in **Greenlandic/Arctic** exploration and mining
- Lumina is **vertically integrated** with advanced multi-material processes close to customers to enable **differentiated market intimacy**

## R&D / Technology

- Lumina develops custom market-driven **sustainable solutions** for mass-market applications
- Diverse technology portfolio includes **low-carbon ceramics**, **low-energy aluminum**, additives for **sustainable plastics**, and **material handling** innovation
- Full **material science lab** and production in **Jeffersonville, Indiana**

# Sustainability Commitment

- Our commitment to **sustainability** begins at the surface of Greenland and goes all the way to our customers' doors:
  - **Local commitment** is essential to our identity. We are proud to be a part of the local community and we put an effort into hiring, training and educating local workforce and using local subcontractors
  - **Surface mining** of exposed minerals with virtually no overburden or stripping
  - Ore is extracted only a few km from the processing plant and deepwater fjord shipping dock
  - **Efficient ocean freight** delivers the ore as close to our customers as possible to minimize over-the-road freight
  - Our anorthosite delivers outstanding efficiency in use with virtually **no LOI or moisture losses**.
  - Novel **clean technologies** include low-carbon cement, kiln-free ceramics, 90% CO<sub>2</sub> reduction in mineral processing, friendly flame retardants, lightweighting hollow spheres, and more



# Lumina Management Team

Lumina is a majority privately owned company. Its largest shareholders are Cordiant Capital, Hudson Resources Inc., and Apex Investments. The management team has extensive global experience across a range of mining sectors.

## Brian Hanrahan, CEO

- Joined Lumina in 2021 after extensive career with global industrial minerals leader IMERYS
- B.S. Chemical Engineering, MBA
- Started material science technology company in 2019

## Bent Olsvig Jensen, Managing Director

- Based in Greenland, Bent joined Lumina in 2020 after previously managing Greenland's Ruby mine during the exploration, application, permitting and construction phases.
- Led Exploration company in Greenland to develop mining sector with support of Greenlandic government

## Andrew Fagan, COO

- Based in Canada, Andy joined Lumina in 2021 to continue his career in Greenlandic mining.
- Ph.D. Geology
- Extensive experience exploring and developing mines and operations for Rio Tinto and other major and minor companies.

# Mining in Greenland



# Operating in Greenland since 2011



- Located on a deepwater fjord on the west coast of **Greenland**, 80 km west of Kangerlussuaq
- Company established to exploit unique high-purity **anorthosite** for global industrial applications



# Greenland Perspective





# Mining in Greenland



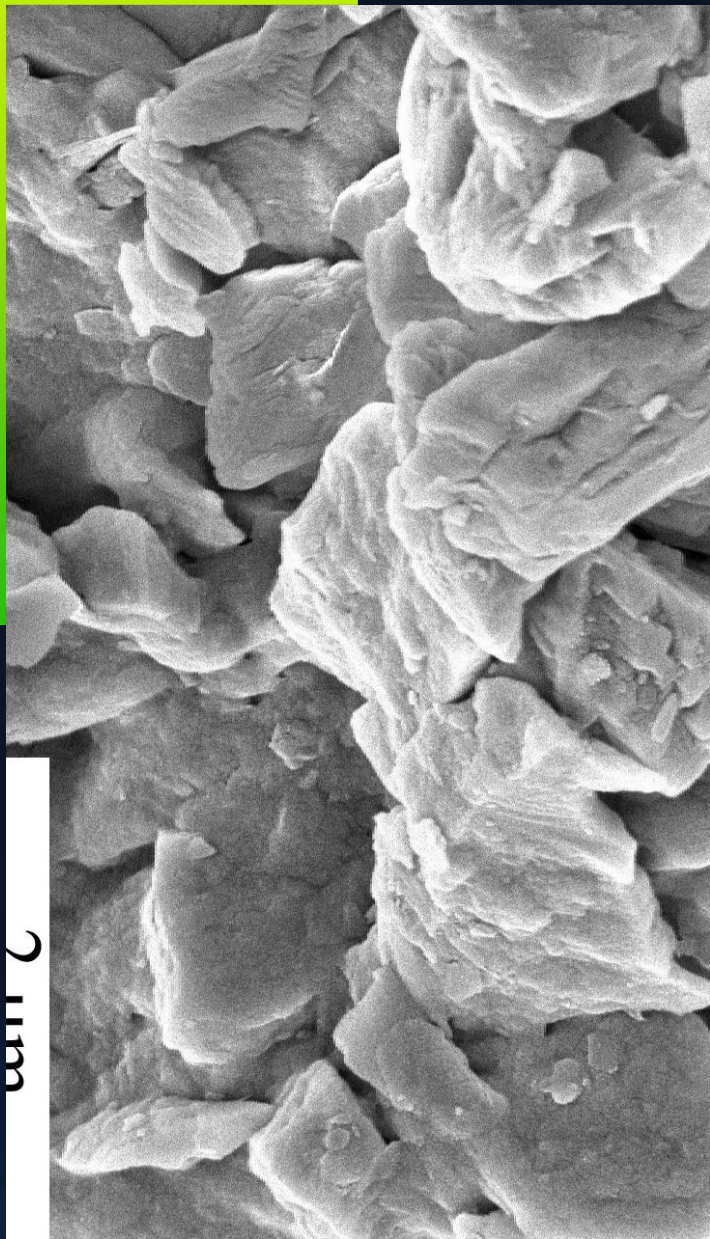


# Mining in Greenland





# Mining in Greenland

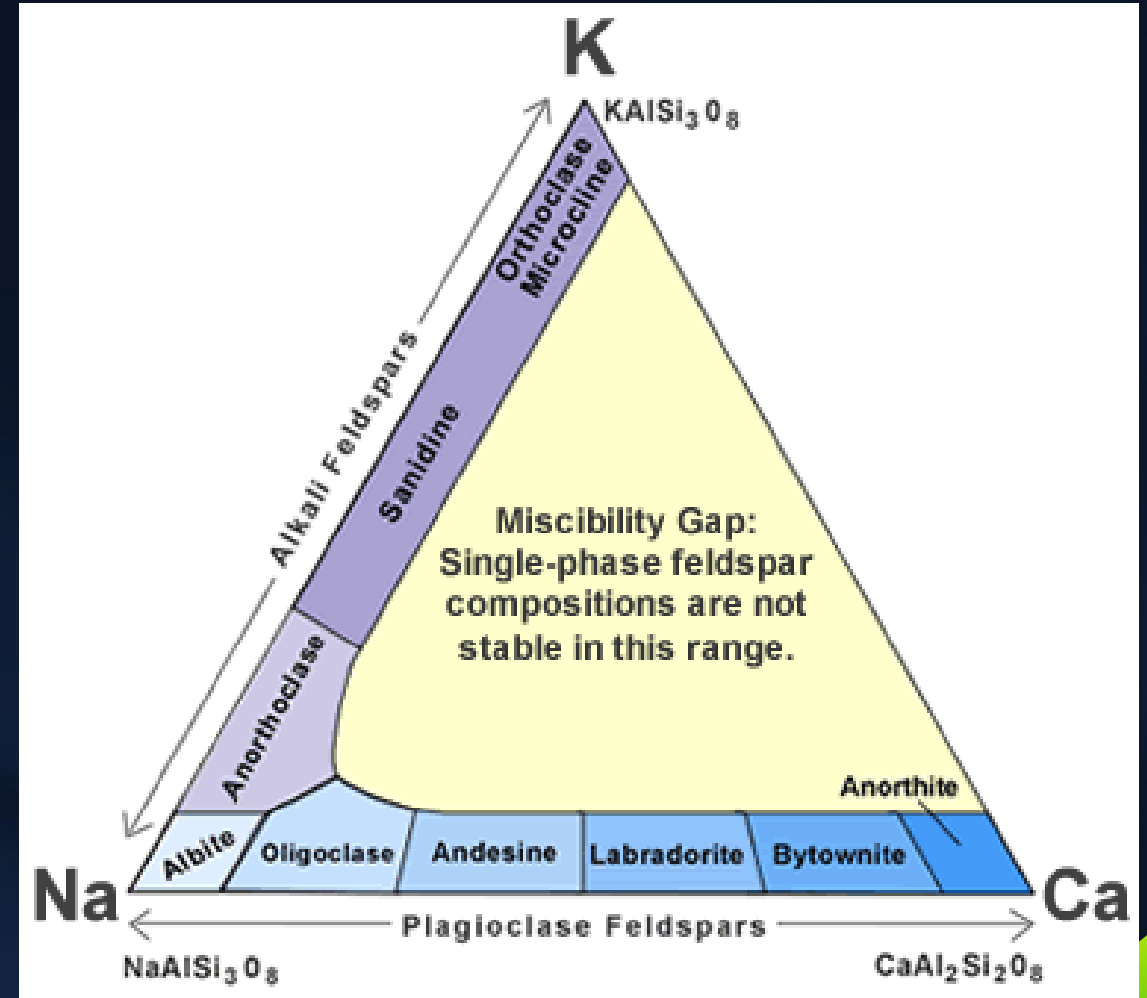


# What is Anorthosite?



# Anorthite Mineral

- Feldspar family represents 50% of the Earth's crust
- Most feldspars are alkali
- Greenland (and Finland) have the only known high-purity calcium feldspars on earth
  - Mineral very common on lunar highlands
- Pure anorthite is  $\text{CaAl}_2\text{Si}_2\text{O}_8$



# Anorthosite Properties

- Specific Gravity
  - 2.6
- Hardness
  - 6 – 6.5
- Bulk Density @ 3 micron
  - 50 lb / cubic ft.
- Refractive Index
  - 1.52
- Brightness
  - 92
- Surface Area
  - 2 - 4 m<sup>2</sup> / gram
- Particle size controllable by milling and classification
- pH
  - 8.2
- Oil Absorption
  - 20
- Impurities
  - Iron < 0.5%
  - No heavy metals
  - Free silica <3%

# Thank you



[www.lumina.gl](http://www.lumina.gl)

