

9 June 2022

Zeotech Limited (ASX: ZEO, "Zeotech" or "The Company") is pleased to attach a copy of its presentation for the Credit Suisse Australia Forum.

Ms Sylvia Tulloch, Chairman, is a member of the panel on the topic "Capturing the hard to abate: the role of CCUS in industry" and will be presenting on the 'ESG Investment Theme' day, Thursday 9 June.

- End -

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# zeotech



**Credit Suisse Australian Forum**

Capturing the hard to abate: the role of CCUS in industry

June 2022

ASX: ZEO

[www.zeotech.com.au](http://www.zeotech.com.au)

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# Company overview



## ESG positive company

An emerging mineral processing technology company, with a portfolio of exciting projects targeting circularity and sustainability, utilising advanced materials 'manufactured zeolites'



## Proprietary process

Maximising green & sustainable processes to produce manufactured zeolites = low energy use, reduced production time, high reagent recycling.



## Patent-pending technology

The company's core technology - International Preliminary Examination Authority examiner, expressed a view that all 26 claims in the PCT application are novel and inventive.



## Circular economy enablement

Developing a value-add lithium process tailings management solution, by producing manufactured zeolites from leached spodumene by-product.



## GHG mitigation / abatement

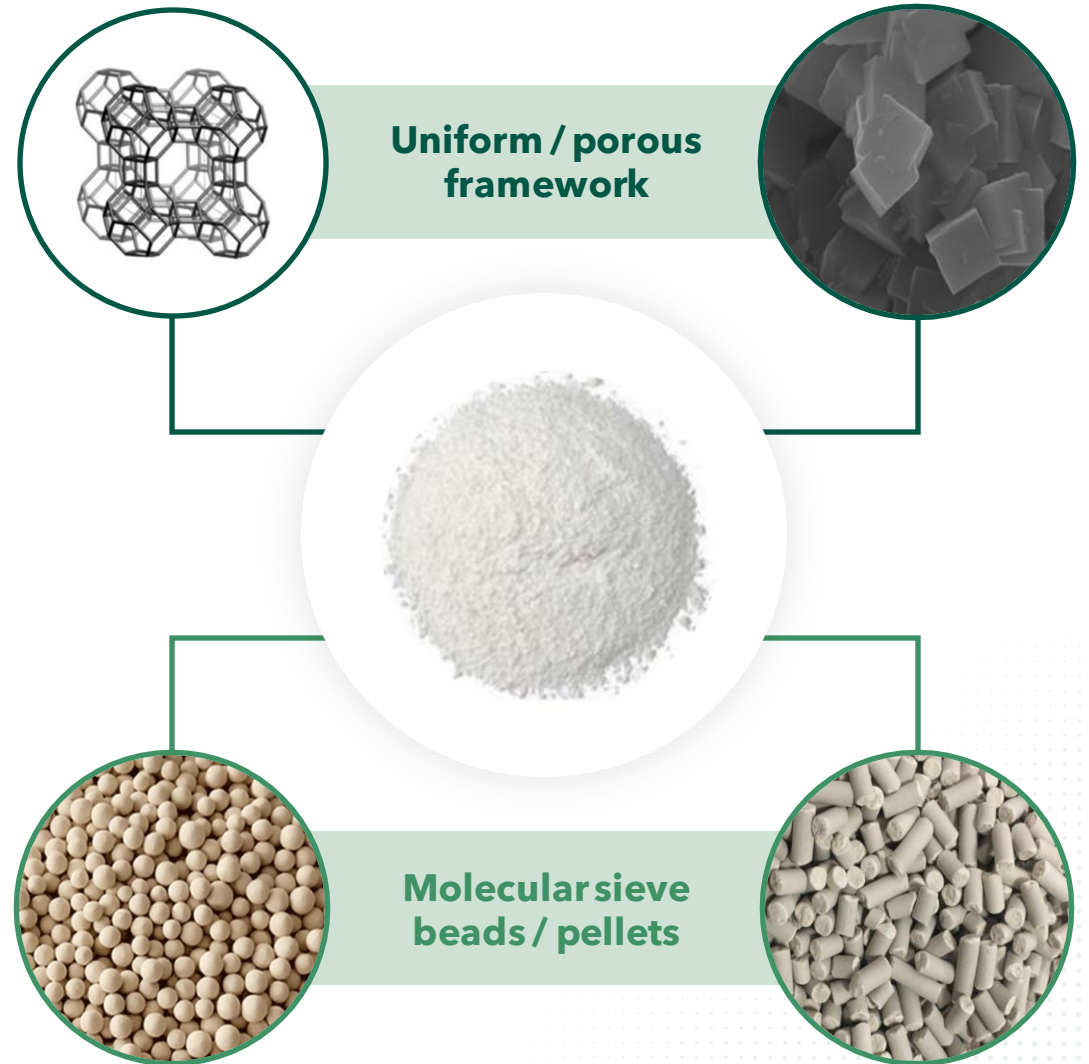
Portfolio of projects targeting the reduction / mitigation of GHG emissions, including CO<sub>2</sub> utilisation, sequestration and methane oxidation.



# Manufactured Zeolites

Zeolites are high-value adsorbents / catalysts with broad applicability

- **Manufactured zeolites** are synthesized aluminosilicate minerals with a **sponge-like structure (frameworks)**
- Zeolites are made up of tiny pores that make them useful as **adsorbents, catalysts and ultrafine filters**
- Type A zeolites are commonly known as **molecular sieves**
- Can be designed to **selectively adsorb molecules or ions** dependent on their unique construction and can be regenerated repeatedly for re-use
- **Manufactured zeolites act like a magnet** that can hold cations, including heavy metals, ammonia, low level radioactive elements, toxins, petrochemicals, many different types of gases and a multitude of various solutions, offering diverse applications



# Collaboration targets circularity and sustainability



## CO<sub>2</sub> utilisation

- Develop a sustainable process for converting captured CO<sub>2</sub> into syngas and hydrocarbon fuels such as methanol.
- CO<sub>2</sub> hydrogenation process utilising green hydrogen and low-cost structured metal-based zeolites as catalysts to produce value add-products.



## Lithium refinery cleantech

- Developing a lithium process tailings management solution
- Proprietary IP to convert lithium process by-product into high value molecular sieve zeolites
- Trailblazer Grant project win, with UQ and Covalent Lithium as project partners.



## Nutrient management & carbon sequestration

- Developing ZEO agri-products, to improve on-farm economics & offer carbon market opportunity :
  - Improved nutrient mgmt. and soil moisture levels
  - Enhance soil carbon
  - Decrease soil acidification
  - Pesticide Destruction

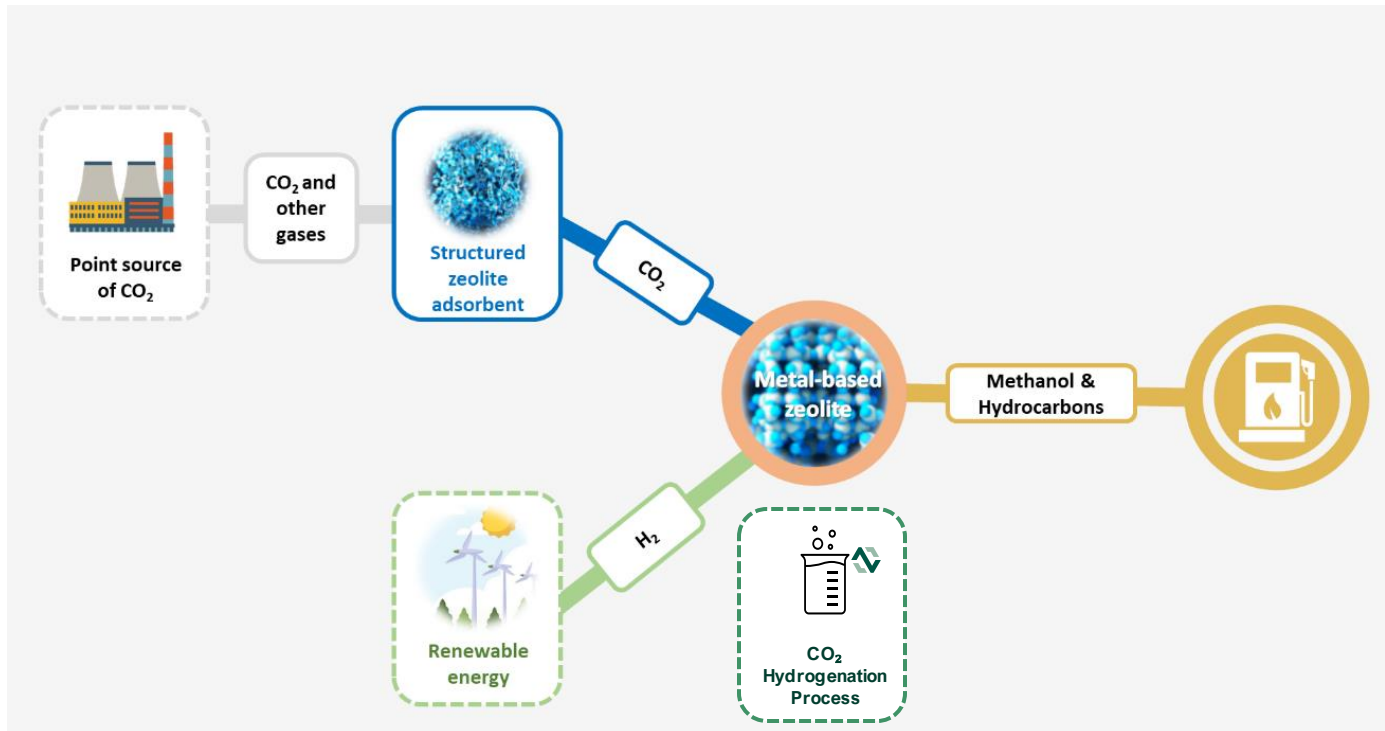


## Landfill methane control program

- Evaluate properties of ZEO manufactured zeolites applied to landfill cover soils to facilitate methane oxidation, as well as decreasing dangerous and nuisance gas emissions.
- Fresh landfill sites have no immediate solution to reduce methane emissions, until retired and capped / engineered.

# CO<sub>2</sub> Utilisation

## Hydrogenation of CO<sub>2</sub> utilising metal-based zeolite catalysts



- Develop a sustainable process for converting captured CO<sub>2</sub> into syngas and hydrocarbon fuels such as methanol.
- The CO<sub>2</sub> hydrogenation process utilising green hydrogen and low-cost structured metal-based manufactured zeolites as catalysts to produce value add-products.
- UQ will undertake the project with ZEO as an industry partner in the ARC Training Centre for the Global Hydrogen Economy.
- CO<sub>2</sub> utilisation process can be an add-on the existing CC technologies or teamed with proven CO<sub>2</sub> separation technology, Pressure Swing Adsorption (PSA).



# Lithium refinery cleantech

Proprietary IP to convert lithium process by-product into high value molecular sieve zeolites

- Zeotech has developed **proprietary process technology** to produce type A molecular sieve zeolites from leached spodumene
- The **cleantech solution** creates a valuable advanced material from lithium refinery by-product and reduces tailings volume
- Australia is expected to become one of the largest producers of lithium hydroxide, a key input for lithium-ion batteries, from demand driven by vehicle electrification and as global economies target carbon neutrality
- Approximately 6-7 tonnes of concentrate feed is required to produce 1 tonne of lithium hydroxide, resulting in a significant surplus of by-product
- Lithium refinery participants are under increasing pressure from regulators and the community to manage **ESG impacts** from mine process by-products.
- IP offers a potential 'circular economy' enabler to the lithium refinery industry





# Developing Agri-Products to improve fertiliser economics and enhance soil carbon



- Program underway to develop agri-products that aim to improve fertiliser delivery economics, whilst enhancing and protecting soil carbon levels.
- Recent trials revealed exceptionally high phosphate retention by Zeotech products.

The early trial results support a range of potential benefits:

- Compelling **slow-release fertiliser** delivery platform;
- Nutrient interception from waste streams coupled with potential **re-application to agricultural soils as a fertiliser**; and
- Additional **co-benefits** from improved soil moisture retention, decreased soil acidification, eutrophication prevention and increased soil carbon protection.

# Landfill methane control program

- Zeolites applied to landfill cover soils could enhance methane oxidation, contributing to **climate change mitigation** as well as decreasing dangerous and nuisance gas emissions.
- Methane is the second most significant GHG with a 100-year **global warming potential 28 times greater than CO<sub>2</sub>**, and landfill methane releases just under 1 Gt of atmospheric CO<sub>2</sub>-e p.a.
- An active manufactured zeolite layer could function to intercept and destroy methane emitted from the underlying refuse within landfill sites
- Comprehensive program planning underway, supported by recent scoping study (completed April 22), found high-level reviews and industry application papers confirming **zeolites offer both biological and chemical methane oxidation potential**.



The blue highlight line indicates where an active manufactured zeolite layer could function to intercept and destroy methane emitted from the underlying refuse.


THANK YOU

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