PROJECT 19 – NOVEL STRUCTURED CERAMIC MEMBRANE FOR CH_4 / CO_2 SEPARATION

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Research Centre for Gas Innovation

cleaner energy for a sustainable future

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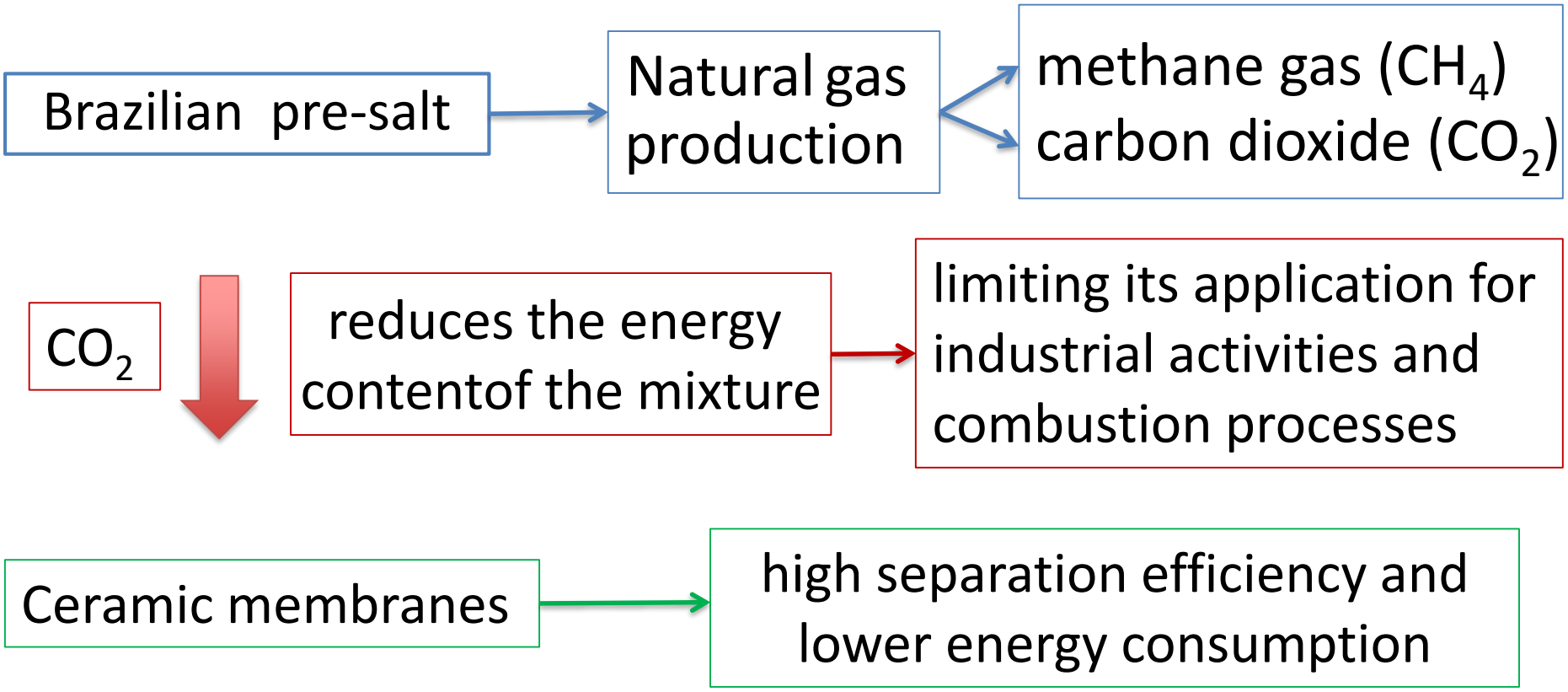
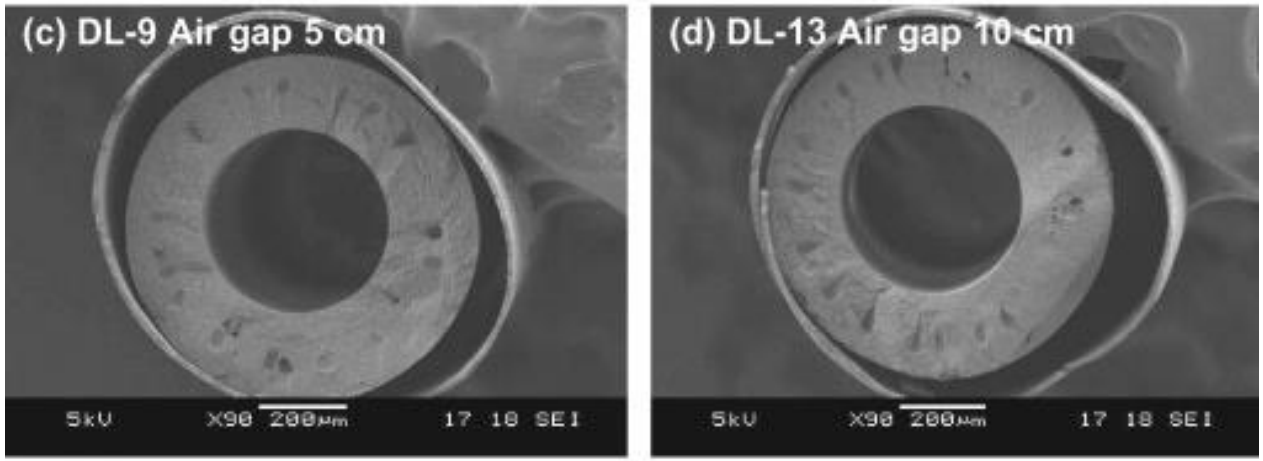
Contextualization



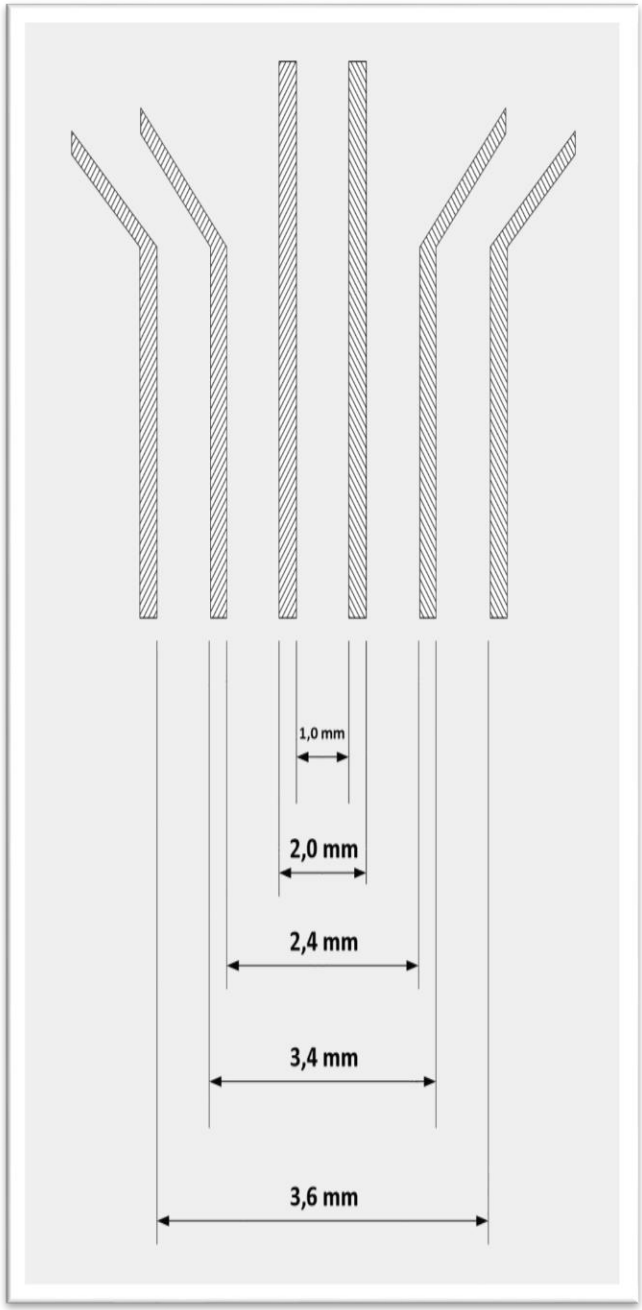
Contextualization

Co-extrusion is a breakthrough to prepare multilayer membranes in a single step

production costs and favor the industrial application of membranes



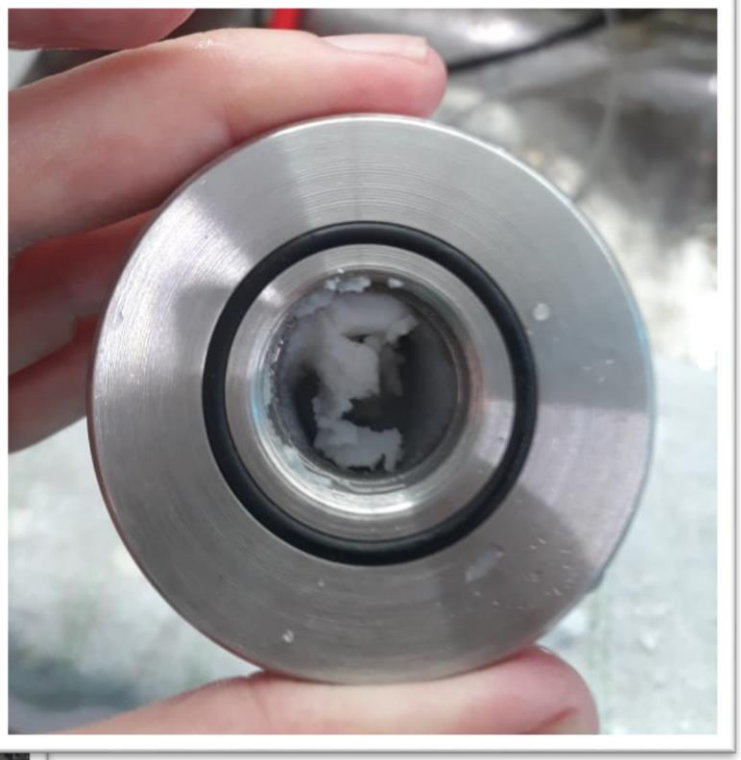
(WIDJOJO et al., 2007)



Membrane Type and Fabrication Process

- Membrane: Double layer composite membrane;
- Separation mechanism: Molecular Sieve:
  - CO_2 kinetic diameter = 3.3 Å;
  - CH_4 kinetic diameter = 3.8 Å.
- Materials:
  - Zeolite 4A (active layer – Opening = 3.5 Å)
  - Aluminum Oxide or clay (support layer);
  - Polyethersulfone (binder);
  - N-Methyl-2-pyrrolidone (solvent).
- Fabrication processes:
  - Phase inversion by immersion precipitation;
  - Sintering.

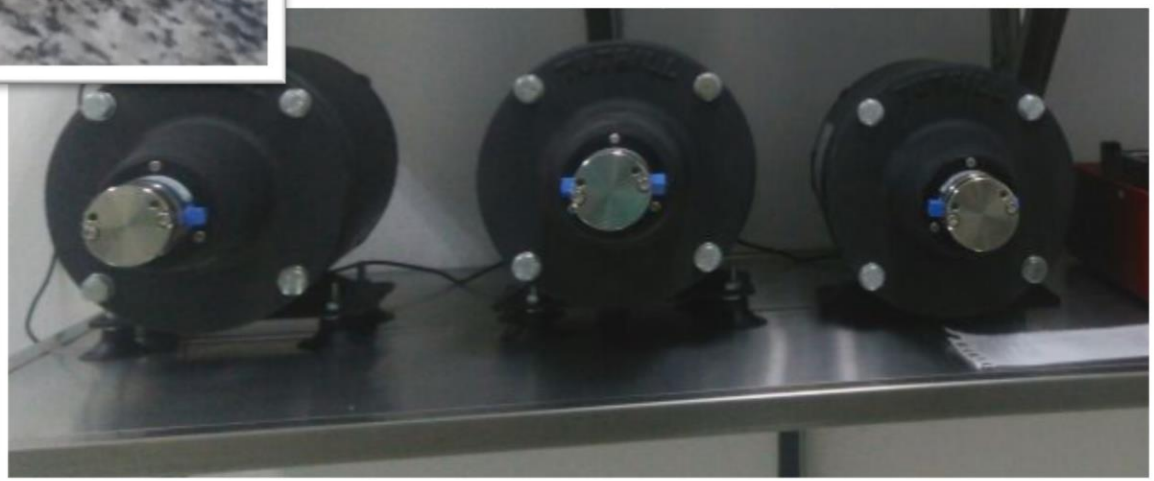
Results and Insights



Results and Insights

Results and Insights

- syringe pumps malfunctioned
  went to maintenance – 18/06 but they have not returned yet.



Waiting Equipment

- Calcination Oven
- Porosity by Physiosorption
- Zeta potential analyzer

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THANK YOU

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