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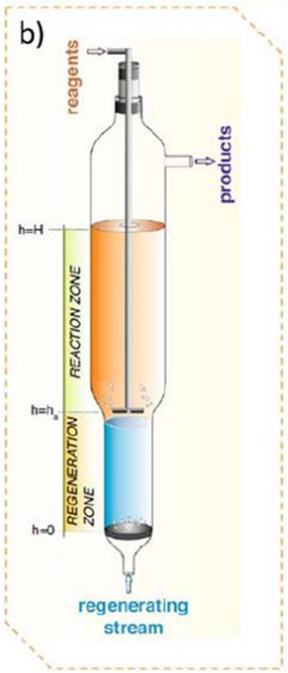
Description of the Organization

- Catalysis, molecular separations and Reaction Engineering Group is a research group from University of Zaragoza focused in the development of new processes, catalysts and membranes.
- Some research áreas in our group include
  - Fluidized bed reactors
  - Membrane reactors
  - New membrane materials
  - New catalysts

Description of your research interest

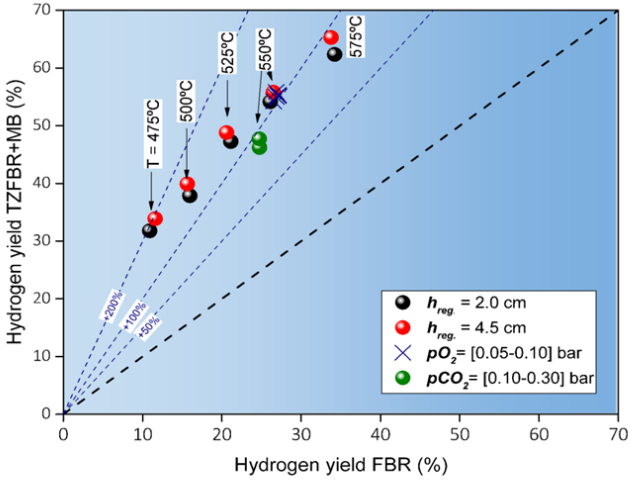
TWO ZONE FLUIDIZED BED REACTOR



- Two zones created by two feeds
  - reducing feed at medium height
  - oxidizing feed at the bottom
- Upper zone: reaction
- Lower zone: oxidation/regeneration
- Fluidized bed → mixing of solid
- Applications:
  - selective oxidations
  - continuous regeneration

Examples of applications

- Steam reforming of methane
- Dry (CO_2) reforming of methane
- Steam reforming of glycerol
- TZFBR+ H_2 selective membranes



Comparison of hydrogen yield from DMR of biogas, using FBR or TZFBR+MB reactor configurations

Project Idea

Please indicate relevant Horizon Cluster 5 project ideas

Please add TITLE of the PROJECT IDEA : multizone fluidized bed reactor

- Objectives:
  - To make in a single reactor the desired reaction and the catalyst regeneration
  - To produce hydrogen from renewable sources (e.g. residues)

- Expected results
  - Counteract catalyst deactivation
  - More compact reactor and steady state operation
  - Lower CAPEX and OPEX

Project Idea: multizone fluidized bed reactor

Potential calls to apply:

- C5-D3-RES-09-2021: Carbon fixation and gas cleaning technologies for biogenic flue gases from heating and CHP

- **C5-D3-RES-11-2021: Carbon-negative sustainable biofuel production**
- **C5-D3-RES-20-2021: Innovative biomethane production as an energy carrier and a fuel**
- **C5-D3-RES-34-2022: Efficient and low-emission technologies for industrial use of combustion and gasification systems from low-value biogenic residues and wastes**
- **C5-D3-RES-54-2021: Renewable energy incorporation in manufacturing/chemical/ petro-chemical industry**
- **C5-D3-RES-59-2022: Coupling synthesis of complex renewable energy carriers with surplus renewable electricity**

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