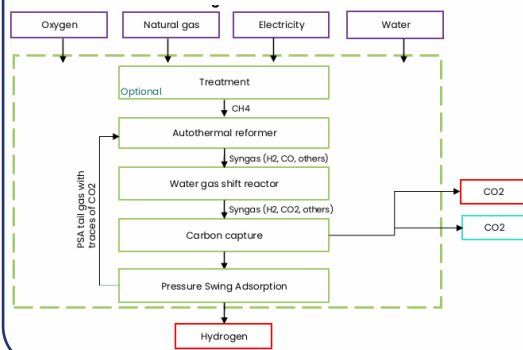


# Hydrogen Purification by Pressure Swing Adsorption (PSA)

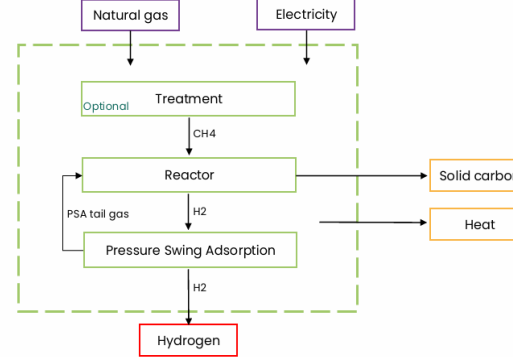
## Introduction

- $H_2$  is a key component in the global shift toward cleaner energy sources.
- Achieving high purity  $H_2$  remains a significant challenge.
- **Aim** is to find the best adsorbent for  $H_2$  purification to improve hydrogen purity, and recovery, and optimize PSA process parameters.

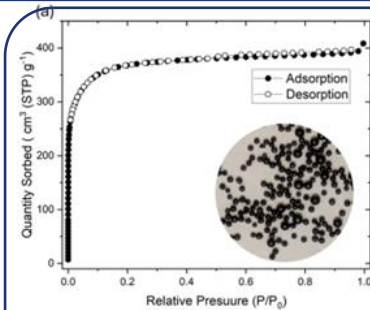
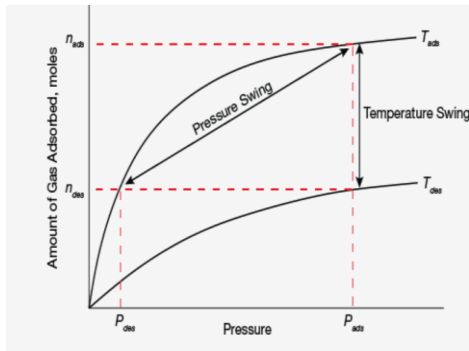
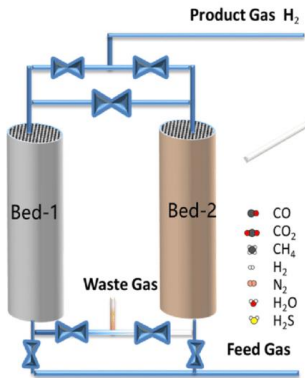
## Autothermal Reforming-CCS



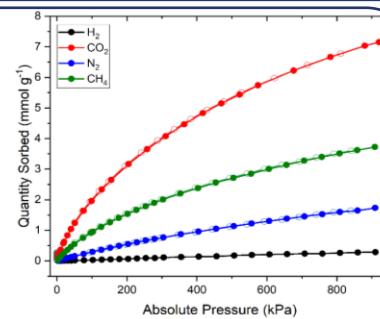
## Methane splitting



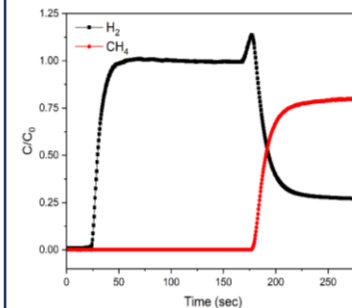
## PSA Operating Principle



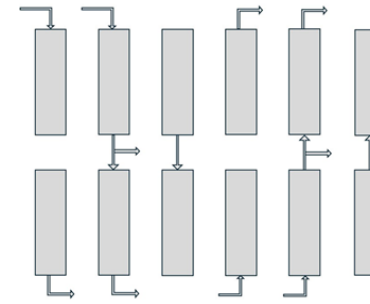
Adsorbent characterization



Adsorption Isotherms



Breakthrough Curves



PSA Cycles

Ashika Dilshani Wackwella Gamage

Affiliation(s): University of Stavanger, PhD Candidate

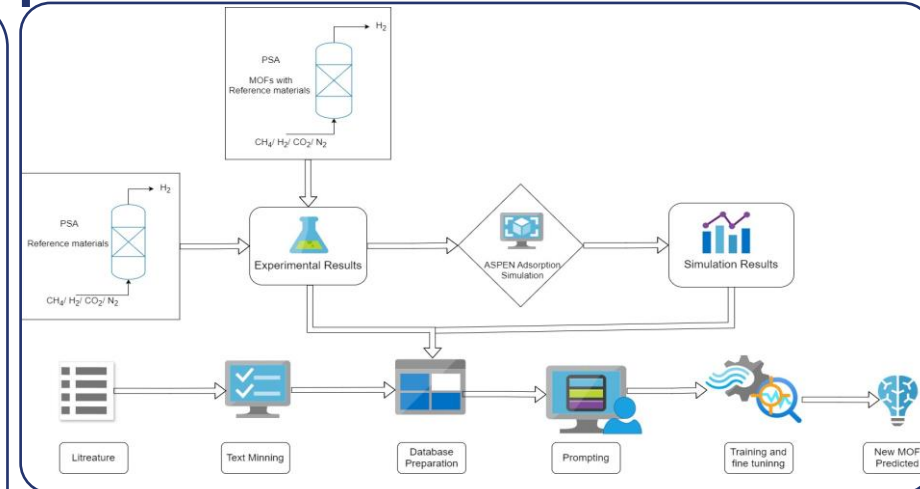
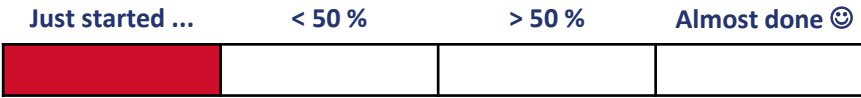
Related projects: HyValue

Supervisor: Assoc Prof Sachin Chavan

- Masters in Chemical NanoEngineering (Erasmus Mundus)
- B.Sc. in Chemical and Process Engineering.



Estimated progress of the PhD project:



## Publications

- Du Z, et al. Catalysts. 2021;11(3):393.
- Yu S, et al. Artif Intell Chem. 2024;2(2):100076..