

Pd-based membranes for hydrogen and ammonia

Introduction

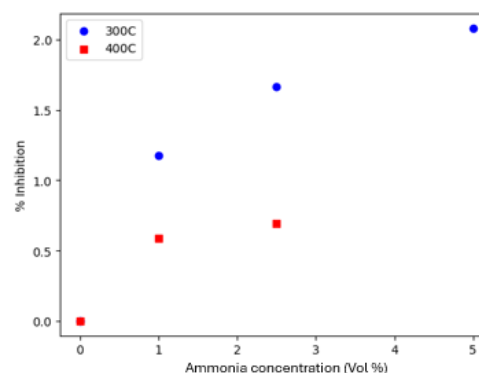
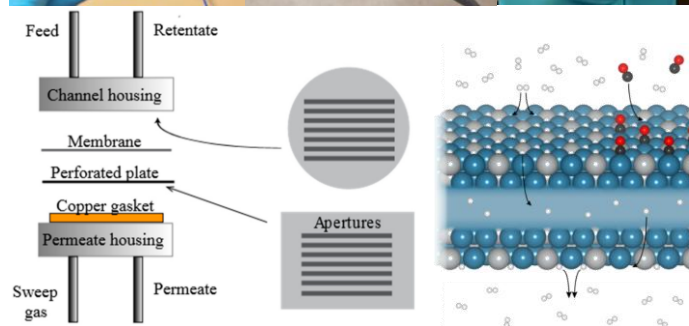
- To address distribution challenges in the development of hydrogen systems, ammonia is regarded as a high-potential carrier.
- While this solution would improve economic and safety considerations of hydrogen transport, it requires efficient separation and purification of hydrogen prior to end use.
- Palladium-silver (Pd-Ag) membranes have been shown to separate H_2 from gas mixtures with high purity

Primary objective

- Investigate performance and stability of Pd-Ag membranes for hydrogen separation when exposed to ammonia

Secondary objective

- Improve understanding of Pd-Ag membrane surface changes (adsorption, segregation) in presence of impurities



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Related projects: FME Hydrogeni

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Education

- MSc. in Science Technology, Aalto University, Finland
- MSc. in Engineering, Taltech, Estonia
- MSc. Biology AgroSciences, URCA, France
- BSc. In Chemical Engineering, University of Alberta, Canada



Estimated progress of the PhD project:

Just started ... < 50 % > 50 % Almost done ☺

Publications

- Peters T, Caravella A. Pd-Based Membranes: Overview and Perspectives. Membranes (Basel). 2019 Feb 1;9(2):25. doi: 10.3390/membranes9020025. PMID: 30717272; PMCID: PMC6410063.
- Vicinanza, Nicla & Svenum, Ingeborg-Helene & Næss, Live & Peters, T.A. & Bredesen, Rune & Borg, Anne & Venvik, Hilde. (2015). Thickness dependent effects of solubility and surface phenomena on the hydrogen transport properties of sputtered Pd77%Ag23% thin film membranes. Journal of Membrane Science. 476. 602-608. 10.1016/j.memsci.2014.11.031.