

JOONSOO HAN

Ph.D | Chemistry and Chemical reaction engineering | R&D

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Göteborg, Sweden



SUMMARY

Dedicated and mission-driven engineering person with over 5 years in heterogeneous catalysis, adept at team collaboration and technical vision implementation. Known for solutions on challenging tasks in material science and chemistry.

EXPERIENCE

Ph.D candidate

Chalmers University of Technology

02/2019 - 03/2024 Göteborg, Sweden

- Developed metal exchanged framework microporous materials reducing green house gas (N₂O) and NO_x emissions by 43% and 90%, respectively.
- Developed surface treatment method to remove surface oxygen to identify copper-ions species.
- Reactor setup handling highly corrosive gases (H₂SO₄).
- Proposed new reaction mechanism in NH₃-SCR system.
- Publishing 10 research papers to highly impact journals.
- Awarded front cover paper in ACS Engineering au on July/August in 2024.
- Managing chemistry lab and synthetic gas bench reactor for 4 years in excellent way.
- Supervising master students for design of experiments (DOE) and computational fluid dynamic (CFD) course using statistical approach and ANSYS Fluent for 4 years.

Researcher

Korea institute of machinery & materials

01/2016 - 05/2018 Dajeon, South Korea

- Optimized emissions control system for diesel combustion engine, improving overall NO_x reduction efficiency by 84%.
- Completed project mission by meeting NO_x and PM emissions standard for 56 kW off-road diesel engine.
- Publishing 2 research papers to international journals.
- Developed hardware in the loop simulation (HILS) using Labview.
- Played a pivotal role in the analysis and emissions control of engineering solutions, delivering 3 high-stake projects on time and under budget.

Master student

Chonbuk National University

03/2015 - 02/2017 Daejeon, South Korea

- Biodiesel synthesis using animal fat.
- Managing engine test bench and emissions measurement facility for 2.5 years.
- Established NO_x reduction strategy by 84%.
- Presenting research work at conferences.

EDUCATION

Doctor of Philosophy in Chemical Engineering

Chalmers University of Technology

02/2019 - 03/2024 Göteborg, Sweden

Master of Science in Mechanical Engineering

Chonbuk National University

03/2015 - 02/2017 Jeonju, South Korea

Bachelor of Science in Mechanical Engineering

Chonbuk National University

03/2009 - 02/2015 Jeonju, South Korea

KEY ACHIEVEMENTS



Designed microporous materials reducing greenhouse gas

Led the designing metal framework microporous material reducing green house gas (N₂O) and NO_x emissions by 43% and 90% respectively. Recognized for outstanding leadership.



Outstanding performance and project management

Publishing 10 research papers in highly impact journals through collaboration, and successfully satisfied project's mission, meeting Tier-4 NO_x and PM emissions standard.



Research Award

Selected front cover research paper in ACS Engineering au journal on July/August in 2024.



Team support Excellence

Supporting research team members who require technical support, achieving co-authorship in 8 papers and improving overall team performance.

SKILLS

Project Management

Material synthesis

Material characterization and spectroscopy measurement (In-situ/Ex-situ)

Temperature programmed response method

Mass spectrometry

FTIR

UV-Vis.-DRS

SEM-EDX

BET surface area

EPR

XPS

XRD

DSC

XRF

ICP

Data Analysis

MATLAB

2D/3D CAD (AutoCAD/CATIA)

ANSYS FLUENT

AVL PUMA

HONORS & AWARDS

Certificate of superior of engineering mathematics issued by Chonbuk National University

Scholarship Certificate issued by industry, University, and Government Coupling Project. (April 2013)

Selected front cover research paper in ACS Engineering au journal (July/August 2024)