

Vlad-Cristian Sandu

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Home: Mehedinți 61-63, Cluj-Napoca (Romania)

WORK EXPERIENCE

Expert Scientific Researcher in Postdoctoral Advanced Fellowship Program (PFE-550-UBB)

[2024 – Current]

Project title: **Assessment of Thermal Decomposition of Dolomite-based Sorbent Materials in Calcium Looping Technology: Particle and Reactor Modelling with COMSOL Multiphysics**
Funding source: Babes-Bolyai University through the project "STAR-UBB Academic Research Network of Excellence (STAR-UBB-N)"

Assistant Professor, Department of Chemical Engineering

Babeș-Bolyai University, Faculty of Chemistry and Chemical Engineering [2022 – Current]

City: Cluj-Napoca | **Country:** Romania

Conducting seminars and lab sessions for the following subjects: Computer Programming with Engineering Applications, Fundamentals of Chemical Reaction Engineering, Dynamic Analysis of Chemical Processes, Optimization of Chemical Processes.

Research Assistant in national project (team member)

[2021 – 2023]

Project name: **Advanced thermo-chemical systems for time-flexible energy conversion and storage applications with low carbon dioxide emissions**
Funding source: CNCS - UEFISCDI, PCE project type

Research Assistant in national project (team member)

[2020 – 2022]

Project name: **Validation of innovative energy efficient calcium looping technology for decarbonisation of fossil fuel-intensive industrial applications (INNOCAL)**
Funding source: CNCS - UEFISCDI, PED project type

Research Assistant in international project (team member)

[2018 – 2020]

Project name: **Three dimensional printed capture materials for productivity step-change (3D-CAPS)**
Funding source: CNCS – UEFISCDI, ERA – NET ACT project type

Research Assistant in national project (team member)

[2018 – 2019]

Project name: **Developing innovative low carbon solutions for energy-intensive industrial applications by Carbon Capture, Utilization and Storage (CCUS) technologies**
Funding source: CNCS - UEFISCDI, PCE project type

7.11.2025

EDUCATION AND TRAINING

Doctorate in Engineering Sciences
Babeș-Bolyai University, Doctoral School of Chemical Engineering, Cluj-Napoca [01/10/2018 – 03/05/2022]

Field(s) of study: Chemical Engineering

Master's Degree
Babeș-Bolyai University, Faculty of Chemistry and Chemical Engineering, Cluj-Napoca [2016 – 2018]

Field(s) of study: Advanced Chemical Process Engineering

Engineering Diploma
Babeș-Bolyai University, Faculty of Chemistry and Chemical Engineering, Cluj-Napoca [2012 – 2016]

Field(s) of study: Biochemical Engineering

Baccalaureate Diploma
Emil Racovita National College, Cluj-Napoca [2007 – 2011]

Field(s) of study: Natural Sciences

PROFESSIONAL DEVELOPMENT COURSES

[2023]
Grant writing training, UBB-CESO

Organized by Prof. Dr. Răzvan Chereches
Horizon 2020 Support Centre, UBB

[05/07/2021 – 09/07/2021]
Summer school participant - International Summer School for PhD students on methods and technologies for energy transition and climate protection, Gliwice, Poland.

Silesian University of Technology

[07/07/2019 – 12/07/2019]
Summer school participant - International Carbon Capture and Storage (CCS) Summer School, Regina, Canada

IEA Greenhouse Gas R&D Programme (IEAGHG)

[2018]
MATLAB programming course for engineers and researchers

coursera (online course platform), Vanderbilt University

[2017]
CS50 programming course

edX (online course platform), Harvard University

RELEVANT SCIENTIFIC PUBLICATIONS

[2024]
CFD simulation of syngas chemical looping combustion with randomly packed ilmenite oxygen carrier particles

V.C. Sandu, C.C. Cormos, A.M. Cormos, published in *Clean Technologies and Environmental Policy* 26 (1), 129-147. DOI: https://doi.org/10.1007/s10098-023-02608-x

[2024]
3D-CFD Modeling of Hollow-Fiber Membrane Contactor for CO2 Absorption Using MEA Solution

A.C. Bozonc, **V.C. Sandu**, C.C. Cormos, A.M. Cormos published in *Membranes* 14 (4), 86. DOI: https://doi.org/10.3390/membranes14040086

7.11.2025

[2024]

Performance of industrially implemented turbulent contact absorbers – A comparative study

F.M. Ilea, A.M. Cormos, S. Dragan, **V.C. Sandu**, C.C. Cormos, published in *Chemical Engineering Research and Design* 203, 346-356. DOI: https://doi.org/10.1016/j.cherd.2024.01.050

[2023]

Multiscale CFD modelling of syngas-based chemical looping combustion in a packed bed reactor with dynamic gas switching technology

V.C. Sandu, C.C. Cormos, A.M. Cormos, published in *Journal of Environmental Chemical Engineering*, 11 (6), 111381. DOI: https://doi.org/10.1016/j.jece.2023.111381

[2023]

Environmental impact assessment of green ammonia coupled with urea and ammonium nitrate production

S.C. Galusnyak, L. Petrescu, **V.C. Sandu**, C.C. Cormos, published in *Journal of Environmental Management*, 343, 118215. DOI: https://doi.org/10.1016/j.jenvman.2023.118215

[2021]

Fuel reactor CFD multiscale modelling in syngas-based chemical looping combustion with ilmenite

V.C. Sandu, A.M. Cormos, C.C. Cormos, published in *Energies*, 14, 6059. DOI: https://doi.org/10.3390/en14196059

[2021]

3D-Printing of adsorbents for increased productivity in carbon capture applications (3D-CAPS)

S.N. Sluijter, J. Boon, J. James, S. Krishnamurthy, A. Lind, K.A. Andreassen, R. Blom, A.M. Cormos, **V.C. Sandu**, R. de Boer, published in *International Journal of Greenhouse Gas Control*, 112, 103512. DOI https://doi.org/10.1016/j.ijggc.2021.103512

[2021]

Assessment of CO2 capture efficiency in packed bed versus 3D-printed monolith reactors for SEWGS using CFD modelling

V.C. Sandu, A.M. Cormos, I.D. Dumbrava, A. Imre-Lucaci, R. de Boer, J. Boon, S.N. Sluijter, published in *International Journal of Greenhouse Gas Control*, 111, 103447. DOI: https://doi.org/10.1016/j.ijggc.2021.103447

[2020]

Assessment of main energy integration elements for decarbonized gasification plants based on thermo-chemical looping cycles

A.M. Cormos, **V.C. Sandu**, C.C. Cormos, published in *Journal of Cleaner Production*, 259, 120834. DOI: https://doi.org/10.1016/j.jclepro.2020.120834

[2020]

Techno-economic and environmental evaluations of decarbonized fossil-intensive industrial processes by reactive absorption & adsorption CO2 capture systems

A.M. Cormos, S. Dragan, L. Petrescu, **V.C. Sandu**, C.C. Cormos, published in *Energies*, 13, 1268. DOI: https://doi.org/10.3390/en13051268