

## List of publication

**Prof. Dr. Ing. Cormos Calin-Cristian**

### 1. Books

1. **C.C. Cormos**, *Decarbonizarea combustibililor fosili solizi prin gazeificare*, Presa Universitară Clujană, 2008, 345 pp.
2. **C.C. Cormos**, *Ingineria Reacțiilor Chimice, Aplicații practice pentru studiul reactoarelor omogene și eterogene gaz-lichid*, Presa Universitară Clujană, 2014, 129 pp.
3. **C.C. Cormos**, *IGCC with carbon capture and storage*, Encyclopedia of Sustainable Technologies, 2017, 327-338.

### 2. Articles

1. **C.C. Cormos**, M. Sandru, C. Dinca, F.M. Ilea, A. Dudu, M.D. Lazar, N. Slavu, C. Sava, L. Petrescu, A.M. Cormos, I. Dumbrava, *Comparison of membrane-based pre- and post-combustion CO<sub>2</sub> capture options applied in energy-intensive industrial applications*, STUDIA UBB CHEMIA, LXVIII, 3, 2023 51-70
2. **C.C. Cormos**, M. Dragan, L. Petrescu, A.M. Cormos, S. Dragan, S.C. Galusnyak, A.M. Bathori, *Assessment of green hydrogen production from sorption-enhanced biomass gasification with CO<sub>2</sub> capture feature*, 18-th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), 24 - 29 September 2023, Dubrovnik, Croatia
3. L. Petrescu, S.C. Galusnyak, F.A. Grozav, A. Imre-Lucaci, **C.C. Cormos**, *Technical evaluation and comparison of various value-added products derived from glycerol*, 18-th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), 24 - 29 September 2023, Dubrovnik, Croatia
4. F.M. Ilea, **C.C. Cormos**, S. Dragan, A.M. Cormos, *Techno-Economic Implications of Three Phase Fluidized Bed Absorption Column Applied to Power Generation for an Intensified CO<sub>2</sub> Capture Process*, 18-th Conference on Sustainable Development of

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5. V.C. Sandu, A.M. Cormos, A. Pop, **C.C. Cormos**, *Experimental Study and CFD Simulation of Thermal Decomposition of Dolomite for Calcination During CaL*, 18-th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), 24 - 29 September 2023, Dubrovnik, Croatia
  6. **C.C. Cormos**, M. Dragan, L. Petrescu, S. Dragan, A.M. Cormos, S.C. Galusnyak, F.M. Ilea, A.M. Bathori, *Techno-economic evaluation of synthetic natural gas production based on biomass gasification with CO<sub>2</sub> capture*, 26-th Conference on Process Integration for Energy Saving and Pollution Reduction (PRES'23), 8 - 11 October 2023, Thessaloniki, Greece, published in Chemical Engineering Transactions, 2023
  7. **C.C. Cormos**, L. Petrescu, A.M. Cormos, S. Dragan, C. Dinca, M. Sandru, *Integration of renewable energy and CO<sub>2</sub> capture and utilization technologies for decarbonization of energy intensive process industries*, Computer Aided Chemical Engineering, 52, 2023, 2777-2784
  8. A.D. Selejan, S. Dragan, A.M. Cormos, M. Dragan, **C.C. Cormos**, *Multi-scale modeling and techno-economic analysis of biogas catalytic reforming for hydrogen & power production with CO<sub>2</sub> capture feature*, Computer Aided Chemical Engineering, 52, 2023, 1367-1372
  9. F.M. Ilea, A.M. Cormos, S. Dragan, **C.C. Cormos**, *Performance analysis of three-phase fluidized bed absorber for CO<sub>2</sub> capture industrial application*, Computer Aided Chemical Engineering, 52, 2023, 1693-1698
  10. A.D. Selejan, H. Lisei, A.M. Cormos, S. Dragan, **C.C. Cormos**, *Development of a multi-scale mathematical model for green hydrogen production via biogas steam reforming process*, International Journal of Hydrogen Energy, 2023, accepted, in press
  11. **C.C. Cormos**, *Deployment of integrated Power-to-X and CO<sub>2</sub> utilization systems: Techno-economic assessment of synthetic natural gas and methanol cases*, Applied Thermal Engineering, 231, 2023, 120943
  12. S.C. Galusnyak, L. Petrescu, V.C. Sandu, **C.C. Cormos**, *Environmental impact assessment of green ammoniacoupled with urea and ammonium nitrate production*, Journal of Environmental Management, 343, 2023, 118215

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14. F.M. Ilea, A.M. Cormos, V.M. Cristea, **C.C. Cormos**, *Enhancing the post-combustion carbon dioxide carbon capture plant performance by setpoints optimization of the decentralized multi-loop and cascade control system*, Energy, 275, 2023, 127490
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16. S.C. Galusnyak, L. Petrescu, D.A. Chisalita, **C.C. Cormos**, M. Ugolini, *From secondary biomass to bio-methanol through CONVERGE technology: An environmental analysis*, Energies, 16, 2023, 2726
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20. F.M. Ilea, A.M. Cormos, S. Dragan, **C.C. Cormos**, *Assessment of turbulent contact absorber hydrodynamics with application in carbon capture*, Chemical Engineering Journal, 449, 2022, 137674
21. S.C. Galusnyak, L. Petrescu, **C.C. Cormos**, *Classical vs. reactive distillation technologies for biodiesel production: An environmental comparison using LCA methodology*, Renewable Energy, 192, 2022, 289-299
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23. **C.C. Cormos**, A.M. Cormos, L. Petrescu, S. Dragan, *Techno-economic assessment of decarbonized biogas catalytic reforming for flexible hydrogen and power production*, Applied Thermal Engineering, 207, 2022, 118218

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30. **C.C. Cormos**, S. Dragan, A.M. Cormos, L. Petrescu, *Assessment of Flexible Thermochemical Energy Conversion and Storage System based on Chemical Looping Combustion*, Chemical Engineering Transactions, 94, 2022, 25 - 30
31. **C.C. Cormos**, M. Dragan, C. Dinca, A.M. Cormos, S. Dragan, I.D. Dumbrava, F. Ilea, S. Galusnyak, *Economic Assessment of Green Hydrogen Production from Biomass Gasification with Chemical Absorption and Membrane-based CO<sub>2</sub> Capture*, Chemical Engineering Transactions, 94, 2022, 277 - 282
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  50. **C.C. Cormos**, S. Dragan, A.M. Cormos, L. Petrescu, V.C. Sandu, I.D. Dumbrava, S. Galusnyak, *Application of carbonate looping cycle as an energy-efficient decarbonization process of key fossil-intensive industrial applications*, 10th International Conference on Energy and Environment - CIEM 2021, Bucharest, Romania, 14 - 15 October 2021

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### 3. Patents

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### 4. Research projects

1. Project: *CaLby2030 - Calcium looping to capture CO<sub>2</sub> from industrial processes by 2030*, Horizon Europe, No. 101075416, 2022 - 2026, Project responsible from Babes-Bolyai University;
2. Project: *Advanced thermo-chemical systems for time-flexible energy conversion and storage applications with low carbon dioxide emissions*, Exploratory research project, PN-III-P4-ID-PCE-2020-0032, 2021 - 2023, Project director;
3. Project: *Integrating process intensification methods with advanced control strategies for improved performance of CO<sub>2</sub> capture systems*, Exploratory research project, PN-III-P4-ID-PCE-2020-0632, 2021 - 2023, Member in the research team;
4. Project: *Validation of innovative energy efficient calcium looping technology for decarbonization of fossil fuel-intensive industrial applications*, Experimental – demonstrative project, PN-III-P2-2.1-PED-2019-0181, 2020 - 2022, Project director;



5. Project: *Hybrid Solvent – Membrane for post-combustion CO<sub>2</sub> capture and utilization*, NO Grants Call for Proposals 2019 - CRPs, RO-NO-2019-0379, 2020 - 2023, Project responsible from Babes-Bolyai University;
6. Project: *CONVERGE - Carbon valorisation in energy-efficient green fuels*, Horizon 2020, No. 818135, 2018 - 2022, Member in the research team;
7. Project: *Developing innovative low carbon solutions for energy-intensive industrial applications by Carbon Capture, Utilization and Storage (CCUS) technologies*, Exploratory research project, PN-III-P4-ID-PCE-2016-0031, 2017 - 2019, Project manager;
8. Project: *3D-CAPS: Three Dimensional Printed Capture Materials for Productivity Step-Change*, ERANET ACT, No. 87/2017, 2017 - 2020, Project director;
9. Project: *Demonstration of Gas Switching Technology for Accelerated Scale-up of Pressurized Chemical Looping Applications (GaSTech)*, ERANET ACT, No. 91/2017, 2017 - 2020, Member in the research team;
10. Project: *Dezvoltarea unui proces inovativ și ecologic pentru recuperarea cuprului și a fracțiilor nemetalice din deșeuri de plăci de circuite imprimate fără componente electronice*, Post-doctoral reserch project, Contract no. 57/2018, PN-III-P1-1.1-PD-2016-0139, 2018-2020, Member in the research (mentor);
11. Project: *Optimizarea și validarea instalației pilot demonstrative de captare CO<sub>2</sub> utilizând tehnologia prin absorbție chimică*, Experimental – demonstrative project, 2017 - 2018, Project responsible from Babes-Bolyai University;
12. Project: *SEWGS - Technology platform for cost effective CO<sub>2</sub> reduction in the iron & steel industry*, Horizon 2020, Nr. 640769, 2015 - 2019, Project responsible from Babes-Bolyai University;
13. Project: *Procesul de captare post-combustie a dioxidului de carbon: simularea în regim dinamic și evaluarea degradării solventului*, Proiect de mobilități România - Belgia, 2017 - 2018, Member in the esearch team;
14. Project: *Advanced thermo-chemical looping cycles for the poly-generation of decarbonised energy vectors: Material synthesis and characterisation, process modelling and life cycle analysis*, Romanian-Swiss Research Programme (RSRP), IZERZO\_141976/1, 2013 - 2015, Project director;
15. Project: *Optimizarea tehnico-economică și a impactului asupra mediului a integrării tehnologiilor CCS în centralele electrice pe combustibili fosili solizi și surse energetice regenerabile (biomasă)*, Proiecte colaborative de cercetare aplicativa

- (PCCA), PN-II-PT-PCCA-2011-3.2-0162, 2012 - 2016, Project responsible from Babes-Bolyai University;
16. Project: *Producerea de hidrogen din compuși hidroxilici rezultați ca deșeu la prelucrarea biomasei*, Proiecte colaborative de cercetare aplicativa (PCCA), PN-II-PT-PCCA-2011-3.2-0452, 2012 - 2016, Project responsible from Babes-Bolyai University;
  17. Project: *Sisteme inovative pentru captarea dioxidului de carbon aplicabile proceselor de conversie a energiei*, ERC-like project, PNII-CT-ERC-2012-1; 2ERC, 2012 - 2014, Project manager;
  18. Project: *Metode inovative de captare a dioxidului de carbon prin chemical looping aplicate sistemelor de poli-generare vectori energetici decarbonizați*, Exploratory research project, PN-II-ID-PCE-2011-3-0028, 2011 – 2015, Project manager;
  19. Project: *Sisteme inovative de poli-generare vectori energetici cu captarea și stocarea CO<sub>2</sub> pe baza proceselor de co-gazeificare a cărbunelui și resurselor energetice regenerabile (biomasă) sau a deșeurilor*, Exploratory research project, PNII ID-2455, 2009 – 2011, Project responsible;
  20. Project: *Conceptual design of typical power plant configurations for the estimation of reference capital costs including material*, Proiect realizat pentru European Commission, DG Joint Research Centre, Institute for Energy, The Netherlands, 2010-2011, Project manager;
  21. Project: *Analysis of hydrogen and power (HYPOGEN)-type power plant*, Proiect realizat pentru European Commission, DG Joint Research Centre, Institute for Energy, The Netherlands, 2008, Project manager;
  22. Project: *Dynamis - Towards hydrogen and electricity with CO<sub>2</sub> management*, FP6 integrated project, Coordonator: Sintef Norway, member in the research team of European Commission, DG Joint Research Centre, Institute for Energy, The Netherlands, 2006 – 2009;
  23. Project: *Platforma de simulare control si testare in mecatronica CONMEC*, Proiect CEEEX, 2006 - 2008, Member in the research team;
  24. Project: *Îmbunătățirea performanțelor tehnico-economice ale procesului de calcinare a calcarului într-un cuptor vertical prin modelarea matematică și simularea acestuia cu ajutorul calculatorului*, Young research project - CNCSIS AT, 2005 - 2006, Project manager;

25. Project: *Îmbunătățirea performanțelor tehnico-economice și reducerea impactului asupra mediului a proceselor chimice prin modelarea matematică și simularea acestora cu ajutorul calculatorului*, Young research project - CNCSIS AT, 2006, Member in the research team.