

PUBLICATIONS 2021

DEPRO-H: Development of processes and indicators for sustainable decarbonisation. Membrane Technology.

1. M. Rumayor, J. Fernández-González, A. Domínguez-Ramos, A. Irabien. Deep Decarbonization of the Cement Sector: A Prospective 2 Environmental Assessment of CO₂ Recycling to Methanol. ACS Sustainable Chemistry and Engineering, 2021.
2. G. Diaz-Sainz, M. Álvarez-Guerra, A. Irabien. Continuous electroreduction of CO₂ towards formate in gas-phase operation at high current densities with an anion exchange membrane. Journal of CO₂ Utilization. In press, 2021.
3. I. Merino-Garcia, L. Tinat, J. Albo, M. Alvarez-Guerra, A. Irabien, O. Durupthy, V. Vivier, C. M. Sánchez-Sánchez. Continuous electroconversion of CO₂ into formate using 2 nm tin oxide nanoparticles. Applied Catalysis B: Environmental, 120447. 2021.
4. J.M. Vadillo Abascal, C. Moya Álamo, L. Gómez Coma, J.F. Palomar Herrero, A. Garea Vázquez, A. Irabien Gulías. Modelling and simulation of hollow fiber membrane vacuum regeneration for CO₂ desorption processes using ionic liquids. Separation and Purification Technology, 225, 119465. 2021.
5. J. Albo, M. Alvarez-Guerra, A. Irabien. Electro-, Photo-, and Photoelectro-chemical Reduction of CO₂. Heterogeneous Catalysts: Advanced Design, Characterization and Applications 2, 649-669. 2021
6. J. Albo, G. García. Enhanced visible-light photoreduction of CO₂ to methanol over Mo₂C/TiO₂ surfaces in an optofluidic microreactor. Reaction Chemistry & Engineering 6 (2), 304-312, 2021.
7. J. Albo, M. I. Qadir, M. Samperi, J. A. Fernandes, I. de Pedro, J. Dupont. Use of an optofluidic microreactor and Cu nanoparticles synthesized in ionic liquid and embedded in TiO₂ for an efficient photoreduction of CO₂ to methanol. Chem. Eng. J. 404, 126643, 2021.
8. G. Díaz-Sainz, M. Alvarez-Guerra, B. Ávila-Bolívar, J. Solla-Gullón, V. Montiel, A. Irabien. Improving trade-offs in the figures of merit of gas-phase single-pass continuous CO₂ electrocatalytic reduction to formate. Chemical Engineering Journal 126965. 2021.
9. J. M. Vadillo Abascal, L. Gómez Coma, A. Garea Vázquez, A. Irabien Gulías. Hollow fiber membrane contactors in CO₂ desorption: a review. Energy and Fuels 35(1), 111-136. 2021.
10. M. Rumayor, A. Domínguez-Ramos, A. Irabien. Feasibility analysis of a CO₂ recycling plant for the decarbonization of formate and dihydroxyacetone production. Energy & Fuels 35 (1), 111–136. 2021.
11. A. Angulo-Ibáñez, A. M. Goitandia, J. Albo, E. Aranzabe, G. Beobide, O. Castillo, S. Pérez-Yáñez. Porous TiO₂ thin film-based photocatalytic windows for an enhanced operation of optofluidic microreactors in CO₂ conversion. Iscience, 102654, 2021.
12. J.I. Calvo, C. Casado-Coterillo, A. Hernández. Past, present and future of membrane technology in Spain. Membranes, 11(11) 808, 2021.
13. R. Abejón, C. Casado-Coterillo, A. Garea. Multiobjective optimization based on “distance-to-target” approach of membrane units for separation of CO₂/CH₄. Processes, 9(11) 1871. Open-access, 2021.

DEPRO-I: Characterisation and control of air quality.

14. L. Ruiz-Azcona, B. Markiv, A. Expósito, I. González-Aramburu, M. Sierra, I. Fernández-Olmo, M. Santibáñez. Biomonitoring and bioaccessibility of environmental airborne manganese in relation to motor function in a healthy adult population. *Neurotoxicology*, 87, 195–207, 2021.
15. A Expósito, B. Markiv, L. Ruiz-Azcona, M. Santibáñez, I. Fernández-Olmo. Personal inhalation exposure to manganese and other trace metals in an environmentally exposed population: Bioaccessibility in size-segregated particulate matter samples. *Atmospheric Pollution Research* vol 12, 8, 101123, 2021.
16. A Expósito, B. Markiv, L. Ruiz-Azcona, M. Santibáñez, I. Fernández-Olmo. Understanding how methodological aspects affect the release of trace metal (loid) s from urban dust in inhalation bioaccessibility tests. *Chemosphere* vol 267, 129181, 2021.
17. A. Santurtún, M. L Colom, P. Fdez-Arroyabe, A. Del Real, I. Fernández-Olmo, M. T Zarrabeitia. Exposure to particulate matter: Direct and indirect role in the COVID-19 pandemic. *Environmental Research* 112261, 2021.
18. L. Ruiz-Azcona, I. Fernández-Olmo, A. Expósito, B. Markiv, M. Paz-Zulueta, P. Parás-Bravo, C. Sarabia-Cobo, M. Santibáñez. Impact of Environmental Airborne Manganese Exposure on Cognitive and Motor Functions in Adults: A Systematic Review and Meta-Analysis. *International journal of environmental research and public health* vol 18, 8, 4075, 2021.

DEPRO-T: Life Cycle Assessment Tools for Decision Support in Processes, Products and Services

19. I. Camps-Posino, L. Batlle-Bayer, A. Bala, G. Song, H. Qian, R. Aldaco, R. Xifré, P. Fullana-i-Palmer. Potential climate benefits of reusable packaging in food delivery services. A Chinese case study. *Science of the Total Environment*, 794, 148570, 2021.
20. I. Ruiz-Salmón, A. Fernández-Ríos, C. Campos, J. Laso, M. Margallo, R. Aldaco. The fishing and seafood sector in the time of COVID-19: Considerations for local and global opportunities and responses. *Current Opinion in Environmental Science and Health*, 23, 100286, 2021.
21. A. Fernández-Ríos, J. Laso, C. Campos, I. Ruiz-Salmón, D. Hoehn, J. Cristóbal, L. Batlle-Bayer, A. Bala, P. Fullana-i-Palmer, R. Puig, R. Aldaco, M. Margallo. Towards a Water-Energy-Food (WEF) nexus index: A review of nutrient profile models as a fundamental pillar of food and nutrition security. *Science of the Total Environment*, 789, 147936, 2021.
22. I. Sazdovski., D. Bojovic, L. Batlle-Bayer, R. Aldaco, M. Margallo, P. Fullana-i-Palmer. Circular Economy of Packaging and Relativity of Time in Packaging Life Cycle. *Resources, Conservation and Recycling*. 2021. In press.
23. A. Almeida, P. Loubet, T.P. da Costa, P. Quinteiro, J. Laso, D. Baptista de Sousa, R. Cooney, S. Mellett, G. Sonnemann, C.J. Rodríguez, N. Rowan, E. Clifford, I. Ruiz-Salmón, M. Margallo, R. Aldaco, M.L. Nunes, A.C. Dias, A. Marques. Packaging environmental impact on seafood supply chains: A review of life cycle assessment studies. *Journal of Industrial Ecology*. 2021. In press.
24. I. Ruiz-Salmón, J. Laso, D. Hoehn, M. Margallo, A. Irabien, R. Aldaco. How to achieve the sustainability of the seafood sector in the European Atlantic Area? *Science of the Total Environment*, 2021. In press.
25. A. Campos-Herrero, I. Ruiz-Salmón, J. Laso, D. Hoehn, M. Margallo, R. Aldaco. Environmental assessment of superfood production and consumption: a life cycle thinking approach. *Foods*, 202. In press.

26. D. Hoehn, M. Margallo, J. Laso, I. Ruiz-Salmón, A. Fernández-Ríos, C. Campos, I. Vázquez-Rowe, R. Aldaco, P. Quinteiro. Water footprint assessment of food loss and waste management strategies in Spanish regions. *Sustainability* (Switzerland), 13 (14) 7538. 2021.
27. I. Ruiz-Salmón, J. Laso, M. Margallo, P. Villanueva-Rey, E. Rodríguez, P. Quinteiro, A.C. Dias, C. Almeida, M.L. Nunes, A. Marques, A. Cortés, M.T. Moreira, G. Feijoo, P. Loube, G. Sonnemann, A.P. Morse, C. Ronnan, E. Clifford, L. Regueiro, D. Méndez, C. Anglada, C. Noirot, I. Vázquez-Rowe, R. Aldaco. Life cycle assessment of fish and seafood processed products – a review of methodologies and new challenges. *Science of the Total Environment*, 761 (20). 144094. 2021.
28. D. Hoehn, J. Laso, M. Margallo, I. Ruiz-Salmón, F.J. Amo-Setién, R. Abajas-Bustillo, C. Sarabia, A. Quiñones, I. Vázquez-Rowe, A. Bala, L. Batlle-Bayer, P. Fullana-i-Palmer, R. Aldaco. Introducing a degrowth approach to the circular economy policies of food production, and food loss and waste management: Towards a circular bioeconomy. *Sustainability*, 13 (6). 3379, 2021.
29. L. Batlle-Bayer, A. Bala, R. Aldaco, B. Vidal-Monés, R. Colomé, P. Fullana-i-Palmer. An explorative assessment of environmental and nutritional benefits of introducing low-carbon meals to Barcelona schools. *Science of the Total Environment*, 756, 143879. 2021.
30. M. Margallo, I. Ruiz-Salmón, J. Laso, A. Bala, R. Colomé, C. Gazulla, P. Fullana-i-Palmer, R. Aldaco. Combining technical, environmental, social and economic aspects in a life-cycle ecodesign methodology: an integrated approach for an electronic toy. *Journal of Cleaner Production* 278. 123452. 2021.
31. N. Espinoza Orias, C.J. Reynolds, A.S. Ernstoff, I. Vázquez-Rowe, K. Cooper, R. Aldaco. Food Loss and Waste: Not All Food Waste Is Created Equal. *Frontiers in Nutrition*, 8, 615550. 2021.
32. I. Vázquez-Rowe, K. Ziegler-Rodríguez, M. Margallo, R. Kahhat, R. Aldaco. Climate action and food security: Strategies to reduce GHG emissions from food loss and waste in emerging economies. *Resources, Conservation and Recycling*, 170, 105562. 2021.
33. J. Laso, C. Campos, A. Fernández-Ríos, A. del Río, D. Hoehn, I. Ruiz-Salmón, J. Cristóbal, A. Quiñones, F.J. Amo-Setién, C. Ortego-Maté, S. Tezanos, R. Abajas-Bustillo, A. Bala, P. Fullana-i-Palmer, R. Puig, M. Margallo, R. Aldaco, R. Abejón. Looking for answers to Food Loss and Waste Management in Spain from a Holistic Nutritional and Economic approach. *Sustainability* (Switzerland), 13 (1) 125, 1-24, 2021.
34. J. Cristóbal, M. Ehrenstein, A. Domínguez-Ramos, A. Galán-Martín, C. Pozo, M. Margallo, R. Aldaco, L. Jiménez, A. Irabien, G. Guillén-Gosálbez. Unraveling the links between public spending and sustainable development goals: Insights from data envelopment analysis. *Science of the Total Environment* 147459. 2021
35. J. Cristóbal, L. Sierra, M. Margallo, J. Kannengießer, R. Aldaco, L. Schebek, A. Irabien. Techno-economic and environmental assessment of methane oxidation layer measures through small-scale clean development mechanism – The case of the Seychelles. *Waste Management* 124, 244-253. 2021
36. A. Arguillarena, M. Margallo, A. Urtiaga, A. Irabien. Life-cycle assessment as a tool to evaluate the environmental impact of hot-dip galvanisation. *Journal of Cleaner Production* 290, 125676. 2021