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Photosynthetic bioenergy utilizing CO₂: An approach on flue gases utilization for third generation biofuels

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One of the most important industrial activities related to the greenhouse gases emissions is the cement manufacturing process, which produces large amounts of carbon dioxide (CO₂). Only in 2010, 8% of CO₂ global emissions were due to cement industry. In this work, the use of CO₂ released by the cement sector is described as potential gas for microalgae culture since their biofixation efficiency is higher than terrestrial plants. Therefore, transformation of polluting gas fluxes into new and valuable products is feasible. In addition, bulk applications such as wastewater treatment and biofuels production can be coupled. Finally, microalgae biomass can be also used for the production of valuable compounds such as pigments, food supplements for both humans and animals, and fertilizers. In this review, flue gas emissions coupled to microalgae cultures are described. In addition, since microalgae can produce energy, the biorefinery concept is also reviewed.

Biography

Parra-Saldivar is the Director of Environmental Bioprocess Chair at Centro del Agua, Tecnológico de Monterrey, Mexico. He has over 15 years of experience on environmental bioprocess and conducts research on the nexus water energy and food. He has more than 40 papers in scientific journals; 276 research references; 9 patents. He is senior consultant for professionals in the Wastewater Treatment sector in GEF Caribbean Regional Fund projects for Wastewater Management UNEP-CAR/RCU and he train professionals in wastewater treatment programs from 17 Central American and Caribbean.

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