

(Ca₆Al₂(OH)₁₂(SO₄)₃·26H₂O) and thaumasite (Ca₃Si(OH)₆(CO₃)(SO₄)·12H₂O). (C) After 3 months of exposure to both locations, amount of degradation related minerals for samples exposed in sewage pump was 2 to 3 times higher than those exposed in sand trap as measured by XRD.

Enhancing CO₂ Photo-Hydrogenation Efficiency Using ZnO-Doped Fe Catalysts Synthesized via Hydrothermal and Wet Impregnation Methods

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In this study, iron-doped zinc oxide (ZnO) photocatalysts were synthesized using both hydrothermal and wet impregnation methods, and evaluated for their effectiveness in CO₂ photoreduction under both UV and visible light irradiation. X-ray diffraction (XRD), transmission electron microscopy (TEM), X-ray photoelectron spectroscopy (XPS), nitrogen adsorption-desorption, and UV–vis diffuse reflectance spectroscopy (UV-DRS) were used to characterize the samples.

The results showed that Fe wet impregnation significantly improved the photocatalytic activity compared to Fe-doped ZnO through hydrothermal treatment, and the doping efficiency of 4% iron was found to be the most effective in both scenarios. The iron-doped ZnO samples exhibited unique properties such as light absorption and electron transfer mechanism, leading to enhanced activity for CO₂ photoreduction towards the reverse water gas shift (RWGS) reaction.

The study highlights the potential of iron-doped ZnO photocatalysts for efficient CO₂ conversion, especially towards the RWGS reaction, and provides insights into the optimal synthesis methods and doping conditions.

Green transition of Oil and Gas Companies

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The green transition of oil and gas companies is essential to ease the climate change, the energy industry is one of the biggest contributors to the Greenhouse Gas (GHG) emissions. Their operation and products are polluting our environment directly and indirectly. My research is mainly based on comparative case studies of big, medium and small oil and gas corporation. I am collecting capital expenditures data of those 6 companies on green projects in the last 7 years and also strategies which lead us