

Can Green photocatalysis convert toxic formaldehyde into solar fuel?

This work investigated the feasibility of selective converting the toxic formaldehyde (HCHO) pollutant into solar fuels (CO and CH₄) via green photocatalysis. The yield and selectivity of CH₄ reached 50.3 μmol g⁻¹ and 76.0%, respectively, and the conversion rate of HCHO achieved 35.9%. Reaction pathways were revealed.

How does a formaldehyde plant work?

Most formaldehyde plants use a 37%-42% concentration absorption tower, which will fully absorb formaldehyde gas to ensure the off gas is almost 100% free of formaldehyde in order to meet most client needs with very little investment.

What is heated cyclic voltammetry (heated-CV) in formaldehyde oxidation?

The thermo-electrochemical oxidation of formaldehyde was investigated by heated cyclic voltammetry (heated-CV) experiments, performed with an autolab NOVA electrochemical workstation equipped with a high-temperature electrolytic cell.

Does Helipont have a formaldehyde absorption tower?

Helipont has designed a 50% concentration absorption tower and a 55% concentration absorption tower for clients who want a higher formaldehyde concentration. The absorption tower is used to produce 37% to 42% formaldehyde, and Helipont designs formaldehyde plants with absorption towers for reuse of formaldehyde gas.

How to measure formaldehyde concentration?

The formaldehyde concentration was measured according to national standard "Water quality-Determination of formaldehyde-Acetylacetone spectrophotometric method" (HJ 601-2011). Take 0.2, 0.4, 0.6, 0.8 mL of prediluted (20 times) 200 mg/L formaldehyde wastewater in 50 mL colorimetric tube and dilute with water to 25 mL.

Does formaldehyde oxidate directly in water?

3.4. Analysis of the kinetics of the oxidation The thermo-electrochemical oxidation of formaldehyde can occur directly in water to produce hydrogen and carbon dioxide in the absence of competing redox couples.

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Solar-assisted steam generation is considered as an environmental-friendly and feasible technology to effectively harvest solar energy, which has been widely used in water purification, ...

Most amateur astronomers observe in Visible light. The electromagnetic spectrum encompasses a vast scope, starting almost at Direct Current and with frequencies up to 2.4×10^{23} Hz ...

Sulphonated Naphthalene Formaldehyde is a condensed polymer product. It is mainly used as powerful water reducing agent in concrete and also known as superplasticizer. It produces ...

This article introduces a solar building envelope that integrates salt hydrate-based sorption thermochemical energy storage and photocatalysis to provide a dual functionality of space ...

Urea formaldehyde concentrate carries highest percentage of formaldehyde in liquid form. It is widely used as an anti-caking agent for the urea fertilizer to avoid lump formation of urea because lumped urea is difficult to use by farmers. It is ...

Photocatalytic generation of H₂O₂ from water and O₂ is a promising strategy for liquid solar-fuel production. Previously reported powder photocatalysts promote a subsequent ...

This paper reports the adaptation of the Solar Thermal Electrochemical Process (STEP) for the treatment of formaldehyde in wastewater. The combination of thermochemistry and ...

This article proposes a novel multifunctional solar wall that can realize heating and removal of formaldehyde in winter and dehumidification and removal of formaldehyde in ...

This paper presents a novel approach for treatment of formaldehyde wastewater driven by solar energy, called the STEP-formaldehyde oxidation process. Indoor and outdoor ...

In the present study, artificial photosynthesis by CO₂ reduction in NaCl is studied for solar fuel production. C₁ fuels are evolved from various photoelectrochemical reactions at different reduction potentials depending on ...

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