

Visible-Light-Driven Photocatalysis of Carbon Dioxide and Organic Pollutants by InOCl and Their Composites

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Abstract

In recent times, indium oxychloride (InOCl) has emerged as a mesoporous material catering to high-performance formaldehyde gas sensing applications. In this study, InOCl was synthesized using a high temperature calcination method at 400°C for 48 hours. The binary composite photocatalysts, InOCl/g-C₃N₄ or InOCl/GO, were mixed with varying weights of g-C₃N₄ or GO in an autoclave and heated to 100°C for 4 hours. The products underwent characterization using XRD, FE-TEM, FT-IR, SEM-EDS, DR-UV, BET, PL, EPR, and HR-XPS. Discussion regarding InOCl, InOCl/g-C₃N₄, or InOCl/GO for photocatalytic efficiency reveals significant effects, as these catalysts were utilized for CO₂ reduction and photocatalytic degradation of organic pollutants, such as crystal violet (CV), indicating their promising potential for reducing environmental pollution.

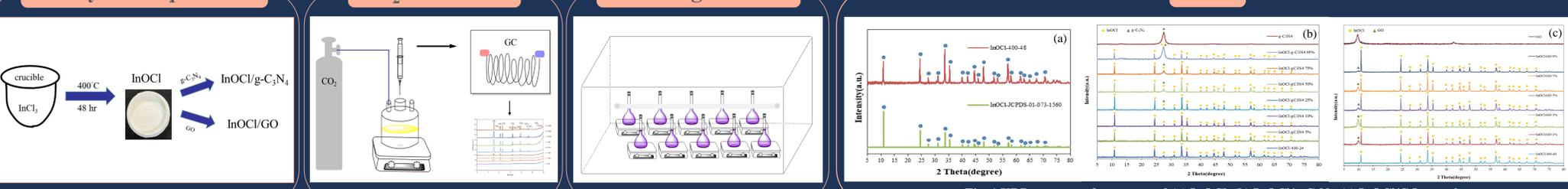
Experiments and Results

Catalysts Preparation

CO₂ Reduction

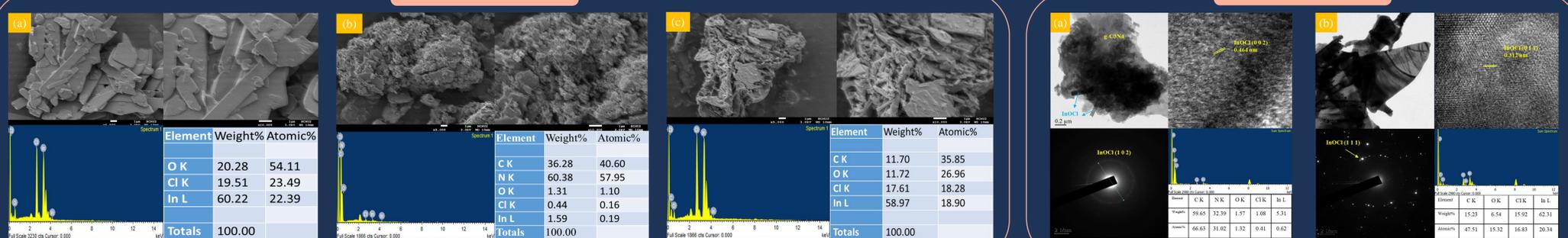
Photodegradation

XRD

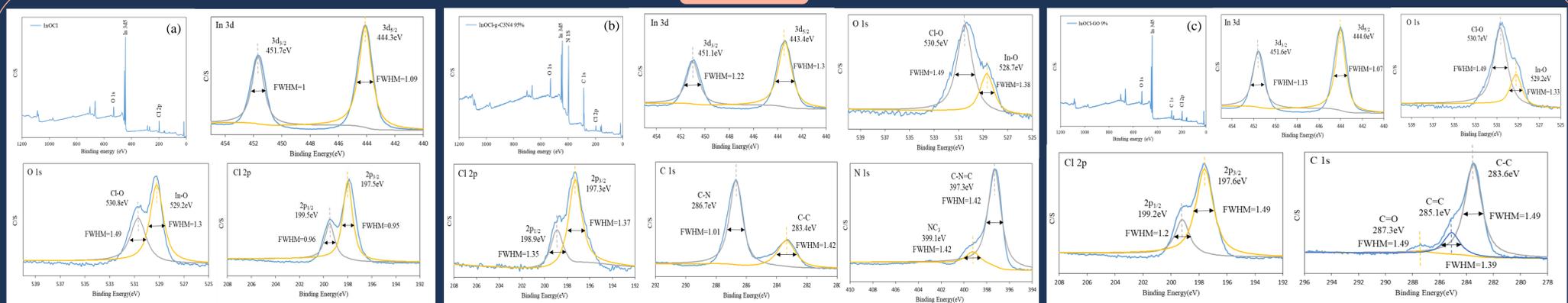


FE-SEM-EDS

FE-TEM-EDS



HR-XPS



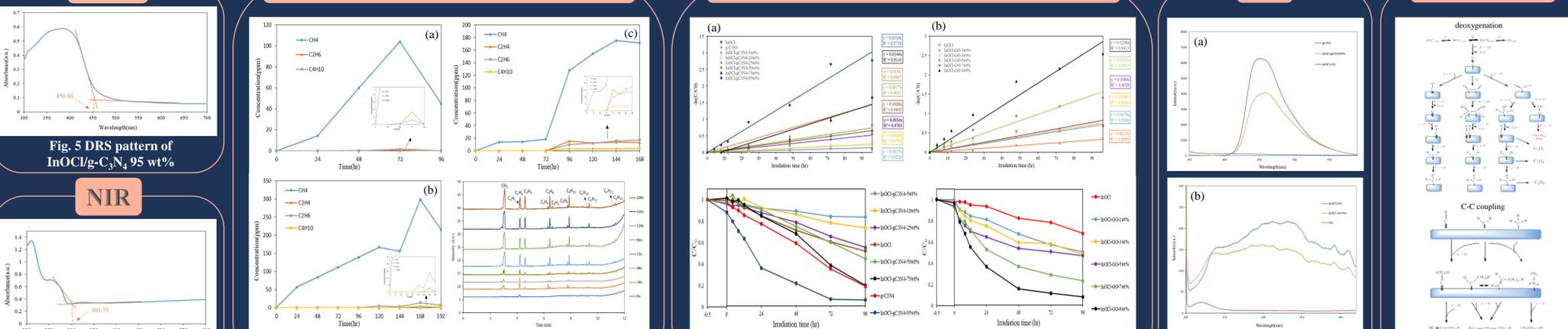
DRS

Photocatalytic Reduction of CO₂

Photocatalytic Degradation of CV

PL

Mechanism



EPR

Scheme

Summary

