Catalysis of bundled optical fibers

Here, we define the concepts of optical fiber chemistry and optical fiber chemi-cal catalysis, delineate their fundamental elements, and formulate the underlying catalytic laws.

These unique optical features facilitate more effective and spatially extended light-catalyst interactions. Herein, we propose the use of fiber tapering to significantly improve the photocatalytic ...

These results indicate that the proposed multi-step hydroxide catalysis bonding method effectively improved thermal stability and reduced bench noise, providing a viable fabrication solution for key ...

An analysis of simultaneous mass, heat, and light transport in a single, catalyst-coated fiber and in a bundle of such fibers showed that the temperature rise is dominated by energy released by light ...

Here we explore utilizing optical fibers coated with 5 wt% CuO supported on TiO2 for photocatlytic H 2 production from water-methanol mixtures. CuO/TiO 2 is a well studied photo ...

Application of semiconductor photocatalysis in a fixed-bed fiber-optic bundled array cable reactor (OFR) for the purification of contaminated water is investigated in this thesis.

This paper introduces Optical Fiber Chemistry (OFC) as a fourth-generation catalytic paradigm, distinguished not by incremental improvements in catalyst materials but by a fundamental ...

A basic mathematical model to describe the degradation of a single compound in a fiber-optic bundled array photocatalytic batch reactor (OFR) using a Langmuir-Hinshelwood kinetic ...

Coupling photocatalyst-coated optical fibers (P-OFs) with LEDs shows potential in environmental applications. Here we report a strategy to maximize P-OF light usage and quantify ...

This paper analyzes simultaneous mass, heat, and light transport in a catalyst on a single fiber, and in a likely large-scale configuration, a bundle of parallel, catalyst-coated optical fibers.

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