

nanoscale zerovalent iron particles pdf

Nanoscale zero-valent iron particles (nZVI) have been studied in recent years as a promising technology for the remediation of contaminated aquifers. Specific positive features of nZVI are the high reactivity towards a broad range of contaminants and the possibility of injecting in aqueous slurries for a targeted remediation of contaminated areas.

Nanoscale zerovalent iron particles for groundwater

Fig. 3. EDS (a) and XRD (b) of nanoscale zerovalent iron particles. -1 tween particles. These chain-like nano iron aggregates were also observed by others [2,22,23]. The specific surface area of the synthesized nanoiron, as determined by the BET method, was ca 29 m² g⁻¹. The zero-valent type of nanoiron particles was confirmed by EDS and XRD (Fig. 3).

RAPID DEGRADATION OF METHYL ORANGE WITH NANOSCALE

Nanoscale zerovalent iron particles for groundwater remediation: A review. ... Recently nanoscale zero-valent iron (nZVI), carbon nanotubes, and nano-fibers have been used for the remediation of a ...

Nanoscale zerovalent iron particles for groundwater

In particular, efforts to use nanotechnology in environmental applications have been grown steadily. Nanoscale zero-valent iron (nZVI) particles are one of the most widely used nanoparticles for environmental remediation because of their ability to degrade a wide range of contaminants [2-4].

Potential environmental implications of nanoscale zero

Carbothermal Synthesis of Carbon-supported Nanoscale Zero-valent Iron Particles for the Remediation of Hexavalent Chromium. Laura B. Hoch, Elizabeth J. Mack, Bianca W. Hydutsky, ... PDF es702589u-file004.pdf (351.58 kB) Article Options. PDF (3053 KB) PDF w/ Links (267 KB) Full Text HTML Abstract ...

Carbothermal Synthesis of Carbon-supported Nanoscale Zero

The sorption of perfluoroalkyl acids (PFAAs), particularly perfluorooctanesulfonic acid (PFOS), to freshly synthesized nanoscale zerovalent iron (nZVI) and aged (oxidized) and sulfidated nZVI, was investigated under anaerobic conditions.

Sorption of Perfluoroalkyl Acids to Fresh and Aged

A "green" protocol was used for the rapid generation of nanoscale zerovalent iron (NZVI) particles using tea polyphenols. The NZVI particles were subsequently examined for in vitro biocompatibility using the human keratinocyte cell (HaCaT) line as a representative skin exposure model. The cells were exposed to NZVI for time periods of 24 and 48 h.

In vitro biocompatibility of nanoscale zerovalent iron

In this study, bimetallic nanoscale zero-valent iron particles (nZVI), including copper/nanoscale zero-valent iron particles (Cu/nZVI) and nickel/nanoscale zero-valent iron particles (Ni/nZVI), were synthesized by one-step liquid-phase reduction and applied for oxytetracycline (OTC) removal.

Performance of bimetallic nanoscale zero-valent iron

Abstract In this study, agar-stabilized nanoscale zero-valent iron (A-nZVI) was synthesized using a

rheological phase reaction method. The structure and morphology of A-nZVI particles were investigated by X-ray powder diffraction, scanning electron microscopy, transmission electron microscopy and Fourier-transform infrared spectrometry.

Synthesis of agar-stabilized nanoscale zero-valent iron

Synthesis of iron nanoparticles Nanoscale zero-valent iron particles can be prepared in aqueous solutions via the reduction of ferric iron (Fe(III)) or ferrous iron(II) with sodium borohydride [3,4], or via decomposition of iron pentacarbonyl (Fe(CO)₅) in organic solvents or in argon [11,12,13].

Characterization of zero-valent iron nanoparticles

The use of nanoscale zero-valent iron (NZVI) instead of using micro/macro-scale Fe₀ (zero-valent iron) materials could potentially eliminate the need for using PRBs and be more effective in both cost feasibility and contaminant remediation.

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