

# Nanotechnology for Water and Wastewater Treatment

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The rapid development of nanoscience enables a technology revolution that will soon impact virtually every facet of the water sector. Yet, there is still too little understanding of what nanoscience and nanotechnology is, what can it do and whether to fear it or not, even among the educated public as well as scientists and engineers from other disciplines.

Despite the numerous books and textbooks available on the subject, there is a gap in the literature that bridges the space between the synthesis (conventional and more greener methods) and use (applications in the drinking water production, wastewater treatment and environmental remediation fields) of nanotechnology on the one hand and its potential environmental implications (fate and transport of nanomaterials, toxicity, Life Cycle Assessments) on the other.

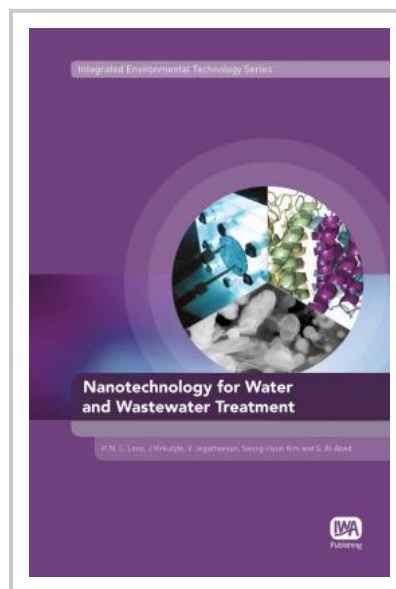
## **Nanotechnology for Water and Wastewater Treatment**

explores these topics with a broad-based multidisciplinary scope and can be used by engineers and scientists outside the field and by students at both undergraduate and post graduate level.

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Introduction: Nanotechnology for water and wastewater treatment: potential and limitation; Characteristics and properties of nanoparticles; Physical and chemical analysis of nanoparticles; Fate and transport of nanoparticles/nanomaterials, toxicity studies; Nanoparticles and bioremediation; Nanosorbents; Effective Phosphate Removal Using Ca-based Layered Double Hydroxide Materials; Mg(OH)<sub>2</sub> nano-adsorbent during Treating the Low Concentration of Cr; Nano catalysts; Visible-light doped titania for water purification: nitrogen and silver doping; Doping of Pd nanocatalysts for PCB removal; The use of bimetallic nanosystems to remove POPs from soils and sediments"; Nanomaterials for disinfection and microbial control; Microbial manufactured silver nanoparticles for water disinfection; Electrospun nanofibers for Point-of-Use Water Treatment; Nanomaterials to enhance filtration; Metallic and ceramic microreactors; Enzyme-Immobilized Nanofiltration Membrane To Mitigate Biofouling Based on Quorum Quenching; Biomimetic membranes for water filtration; Nano sensors ; Functionalised graphene: a novel platform for biosensors; Lab-on-a-Chip Interferometric Biosensor Nanotechnology; Nanosensors for pathogens; Nanomanufacturing: Materials Design and Production; Green synthesis of nanoparticles and nanocatalysts; Plant-based nanoparticle manufacturing.

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