



CYCLE DE CONFÉRENCES DE CHIMIE

*Avec le concours de : Université Clermont Auvergne
INP Clermont Auvergne*

Mercredi 29 avril à 10 h 30

Amphi Vinci, SIGMA Clermont (site des Cézeaux)

Hors cycle

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Combined photocatalytic oxidation and adsorption approaches for sustainable arsenic treatment in aqueous solutions

Arsenic contamination in water is a critical global issue, affecting over 200 million people worldwide. In aqueous environments, arsenic occurs predominantly as As(III) and As(V). Since As(III) is more toxic, mobile, and difficult to remove, its oxidation to As(V) is typically required to enable efficient treatment. Heterogeneous photocatalysis with titanium dioxide (TiO₂) offers a sustainable pathway for As(III) oxidation, yet the subsequent uptake of As(V) is often limited by the low affinity of pristine TiO₂. In this work, we explore strategies that integrate photocatalytic oxidation with enhanced arsenate adsorption to improve overall arsenic removal from aqueous solutions. Two approaches were assessed: (i) a one-step treatment based on sulfated TiO₂, capable of simultaneously oxidizing As(III) and adsorbing As(V); and (ii) a sequential configuration coupling photocatalytic As(III) oxidation with As(V) adsorption onto Fe-doped natural zeolites. The combined processes significantly increased As removal efficiency, offering promising alternatives for sustainable water treatment.

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