

## **Zero-valent iron nanoparticles for environmental Hg (II) removal: a review**

### **ABSTRACT**

Mercury is a natural, long-lasting, and bio-accumulative contaminant found in both soil and water. Mercury is toxic and its organic derivative, methylmercury (MeHg), could be lethal. The increasing level of mercury in the environment is a threat, as it can easily enter the food chain upon exposure. Zero-valent iron nanoparticle (nZVI), an environmentally friendly nanomaterial, is envisaged as an ideal candidate for the remediation of metal pollutions in soil and water bodies. Due to low toxicity and decent activity, nZVI and its corrosion products have shown huge potential for the removal of heavy metals from soil and water. It has been widely applied for the removal of heavy metals including mercury and other organic and inorganic contaminants. In this review, the current preparation methodology, characterization techniques, reductive mechanism for heavy metal removal with focus on mercury is reviewed. This review discusses the use of nZVI for the removal of mercury and demonstrates that nZVI possesses high reactivities for mercury removal and have great application prospects in environmental remediation. Some recommendations are proposed and conclusions drawn for future research.