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Webinars

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Green synthesis of nZVI for remediation of contaminated soils: effect on ecosystem and human health

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Zero-valent iron nanoparticles (nZVI) have been widely studied for their ability to remove contaminants from wastewaters and soils. These nanoparticles suffer from some drawbacks, namely their rapid surface passivation and agglomeration, which can limit their reactivity. The green synthesis of nZVI, where phenolic-rich extracts are used as reducing agents, is an alternative that can help solve these limitations. The use of plant extracts not only reduces the use of organic, toxic solvents, but can also increase the stability of the nZVI, with the formation of phenolic complexes on the surface of the nZVI, limiting its agglomeration. Furthermore, this approach allows for the valorisation of agrifood wastes. The potential toxicity of nZVI has been reported, but it is still and understudied aspect.

In this work, agrifood wastes were used to synthesize green nZVI, which were then used to remediate venlafaxine and glyphosate contaminated waters and soils. The potential toxicity of the synthesized nZVI towards human cells and plants was also assessed.

Short Bio

Filipe Fernandes holds a BSc and an MSc in Bioresources from ISEP. He is currently a PhD student in Sustainable Chemistry, at GRAQ – Grupo de Reação e Análises Químicas, LAQV/REQUIMTE.

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