

## **LOSA Geremia (2018) : Metal biorecovery from e-waste through bacterial-fungal interactions**

### **Abstract**

We investigated a microbe-based approach for the biorecovery of valuable metals from e-waste. E-waste is a heterogeneous matrix at the microbial scale, therefore this research takes advantage of bacterial-fungal (BF) interactions in order to mobilize and immobilize selected metals from model e-waste. We used cadmium (Cd) and a selection of Cd-tolerant microorganisms from our culture collection or isolated from a naturally cadmium-contaminated soil. Several experiments were designed in order to use the synergistic bioremediation capabilities of BF couples to mobilize and immobilize Cd from a culture medium. We aim at designing a process that uses the synergistic bioremediation capabilities of BF couples in order to recover valuable metals from e-waste. Initial results showed that BF couples are more tolerant to cadmium concentrations than the organisms alone. However, setting the conditions leading to effective immobilization of this toxic metal still need further work. Using microbial consortia rather than single species represents an innovative alternative to traditional bioremediation approaches for the development of new biotechnological approaches in urban-mining.

**Keywords:** e-Waste, urban mining, biorecovery, bioremediation, BIF, FH, cadmium, tolerance