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Microbial assisted leaching of sulfide minerals in continuous stirred tank reactors

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In comparison to conventional mining and extraction methods, microbial assisted leaching is an ecological friendly technique in order to win metals. Having decreasing availability of mineral resources, though increasing metal demand in mind, microbial mining, i.e. advanced biotechnology, gains in importance. Bioleaching represents a low energy consuming, cost efficient as well as resource conserving alternative to common ore recovery and hence it is a promising technology, especially for low-grade or complex ore as well as industrial waste (e.g. printed circuit boards).
Our research work focusses on the extraction of ores and dump materials containing strategic metals. We have successfully established a continuous leaching approach in several stirred tank reactors which allowed a liberation of zinc and indium from a local ore. Due to the cascade set-up of the reactors, we were able to achieve varying redox potentials in each reactor. In consequence we reached an enhanced successive leaching of sulfide minerals. By using this procedure, we will be consequently able to propose a technique which allows the winning of strategic metals from local ores.