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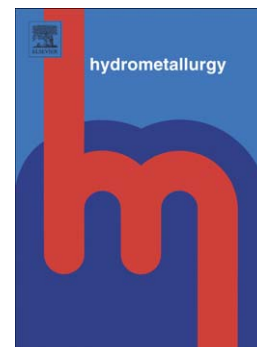
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Measurements Of Dissolved Oxygen In Bioleaching Reactors By Optode

Application

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Abstract

Tank bioleaching of ore promises to give high yields due to the ability to control the leaching process. For that, various parameters like pH, E_H and pO_2 must be measured regularly. However, the measurement of oxygen is especially difficult to realise since oxygen probes are relatively expensive and possess only a low durability. Through the use of an optode system, we propose an easy and less expensive alternative for oxygen measurements. Furthermore, we demonstrate the optode achieves similar and possibly more accurate readings than the conventional electrode. Since we were able to fix the optode sensor at the lower end of a glass tube, this system is suitable for various reactor designs and hence allows for non-invasive, *in-situ* oxygen measurements

The proof of concept was demonstrated by cultivating *Escherichia coli*, *Rhodococcus erythropolis*, *Acidithiobacillus ferrooxidans*, and *Sulfobacillus thermosulfidooxidans* inside 2 L bioreactors. Both optode and oxygen electrode showed similar concentration values, which demonstrates the optode is a reliable tool for oxygen measurements during bioreactor cultivation, especially of iron-oxidisers. Subsequent leaching tests, performed with fine

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