



## Removal of cyanobacteria from supply waters by electroflotation using DSA® electrodes

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### ABSTRACT

The occurrence of cyanobacteria in freshwater is a global problem when considered as drinking water for human consumption. Cyanobacteria cells are difficult to remove in conventional treatment systems. The research objective was to study the removal of cyanobacteria from the water supply through the electroflotation process, using DSA®-type, dimensionally stable anodes composed of  $\text{Ti/Ru}_{0.3}\text{Ti}_{0.7}\text{O}_2$ . The effects of the operational variables of the electrochemical reactor were studied in the pilot system: water input rate and electric current density. The performance of the electroflotation process was determined by the removal of cyanobacteria cells in the treated water. According to the results, there was a cyanobacteria removal of approximately 73% after 30 min of electrolysis, and approximately 78% after 60 min, for the water input rate of  $100.84 \text{ m}^3 \text{ m}^{-2} \text{ d}^{-1}$  and electric current density of  $68.26 \text{ A m}^{-2}$ . Under these conditions, the energy consumption was  $1.28 \text{ kWh m}^{-3}$ . In addition, the electrochemical process showed a removal of 60% and 49% of the apparent color and turbidity of the water, respectively. These results encourage the applicability of the electroflotation process as a pre-treatment alternative for the cyanobacteria removal from the water supply.

*Keywords:* Cyanobacteria; DSA® electrodes; Electroflotation; Experimental planning; Water treatment

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