Electrochemical treatment of papermaking tobacco sheet wastewater on \( \beta \)-PbO\(_2\) and Ti/TiO\(_2\)-RuO\(_2\)-IrO\(_2\) electrodes

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ABSTRACT

\( \beta \)-PbO\(_2\) electrode modified with fluorine resin and Ti/TiO\(_2\)-RuO\(_2\)-IrO\(_2\) electrode exhibited excellent performance in electrochemical treatment of papermaking tobacco sheet wastewater. Most of the organic pollutants and suspended solids could be effectively removed from wastewater under optimized conditions and the main recalcitrant components were converted to biodegradable intermediates. The BOD\(_5\)/COD ratio of wastewater increased from 0.06 to 0.50 (on \( \beta \)-PbO\(_2\)) or 0.47 (on Ti/TiO\(_2\)-RuO\(_2\)-IrO\(_2\)), indicating that the effluent was more apt to biological treatment. Therefore, electrochemical oxidation could be employed as a promising pretreatment method for wastewater treatment of papermaking tobacco sheet manufacturers.

Keywords: \( \beta \)-PbO\(_2\) electrode; Electrochemical treatment; Papermaking tobacco sheet; Ti/TiO\(_2\)-RuO\(_2\)-IrO\(_2\) electrode; Wastewater

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