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Title: The Use of Ni/Sb–SnO<sub>2</sub>-based Membrane Electrode Assembly for Electrochemical Generation of Ozone and the Decolourisation of Reactive Blue 50 Dye Solutions

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1        **The Use of Ni/Sb – SnO<sub>2</sub>-based Membrane Electrode Assembly for Electrochemical**  
2        **Generation of Ozone and the Decolourisation of Reactive Blue 50 Dye Solutions**

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10       **Abstract**

11       Electrochemical ozone generation with ozone current efficiencies up to 33% and power  
12       consumption as low as 25 kWh kg<sup>-1</sup> O<sub>3</sub> at room temperature using Ni/Sb-SnO<sub>2</sub> anodes in a  
13       membrane electrode assembly (MEA) based cell with platinised titanium cathodes separated  
14       by Nafion membrane is reported. The complete decolourisation of 200 cm<sup>3</sup> of 1000 mg dm<sup>-3</sup>  
15       Reactive Blue 50 (RB50) dye within 8 minutes at 2.7 V with 100% current efficiency for the  
16       first 5 minutes and specific power consumption as low as ca. 8 kWh kg<sub>COD</sub><sup>-1</sup> using the MEA –  
17       based cell is also described. The byproducts of the dye oxidation were investigated and the  
18       formation of various organic acids confirmed.

19       **Keywords:**

20       Ozone, MEA, Decolourisation, Electrolysis, Ozonation.

21       **1 Introduction**

22       To date, electrochemical technologies for wastewater treatment have developed such that

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