

Chlorine balance for ClO₄⁻ reduction

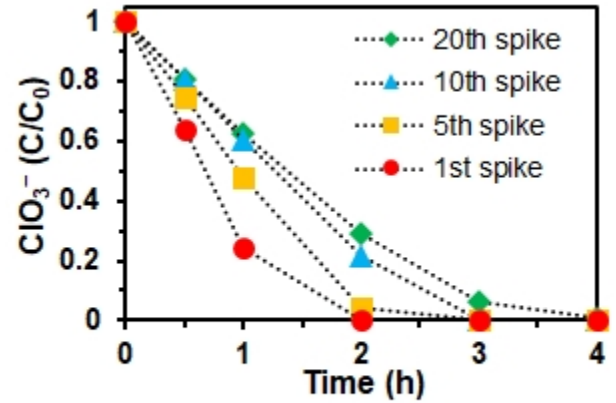


Fig. 3 shows the profiles of the reduction of 0.18M ClO₃⁻ spikes in a multiple-spike reaction series. The decrease of activity was only caused by the gradual build-up of concentrated Cl⁻ (see details in the publication).

ADVANTAGES

- ▶ 55-fold more active than palladium on carbon (Pd/C). Under 1 atm H₂ and room temperature, the (MoO_x-Pd/C).
- ▶ Enables rapid and complete reduction of ClO₃⁻ in a wide concentration range (e.g., 1 μM to 1 M) and ClO₄- concentration ranges from 10μM to 0.1 M.
- ▶ Exhibits strong resistance to concentrate salts such as chloride, sulfate, and bromide at 1 to 5 M.
- ▶ In a batch reactor setup, the catalyst was reused for twenty cycles of 0.18 M ClO₃⁻ reduction and no activity loss was observed.

APPLICATION

The high activity, outstanding stability, and strong resistance to common salts make the MoO_x-Pd/C suitable for removing ClO₃⁻ and ClO₄- and other oxyanions in the brine and in the chlor-alkali process and other scenarios such as water purification, wastewater treatment, and waste brine valorization.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,819,835	11/21/2023	2020-216

RELATED MATERIALS

- ▶ [A Bioinspired Molybdenum Catalyst for Aqueous Perchlorate Reduction](#)
- ▶ [Catalytic Reduction of Aqueous Chlorate With MoO_x Immobilized on Pd/C](#)

RELATED TECHNOLOGIES

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