Oxygen-deficient chlorine solar power generation

What is the degradation rate of solar/free chlorine?
Additionally,high degradation rates were also observed for solar/free chlorine with 5 and 10 mg L -1 of oxidant,reaching 90%of removal in 5 and 3 min and consuming 0.9 and 1.1 mg L -1 of free chlorine,respectively (Figs. S5-S6).

How much free chlorine should be used for oxidant degradation?
The use of 2.5 mg L -1of free chlorine seems to be enough to attain similar total degradation rates compared to 5 and 10 mg L -1 of oxidant. Indeed,no ClO 3- species were detected until 5 min of treatment,which was the illumination time required to reach 80% of the total degradation of OMCs.

Does free chlorine concentration affect OMC degradation and generation of toxic oxyanions?
Firstly, the solar/free chlorine process was studied at lab-scale using a solar simulator to evaluate the effect of free chlorine concentration (0.5-10 mg L-1) on OMC degradation and generation of toxic oxyanions (e. g ., ClO 3- ions).

Do solar-driven free chlorine systems produce oxyanion ions?
Another point rarely investigated in the application of solar-driven free chlorine systems is that the side reactions mediated by UV irradiation may lead to the generation of chlorine oxyanion species,such as chlorate (ClO 3-) and perchlorate (ClO4-) ions (Sánchez-Montes et al.,2020a; Zhao et al.,2021).

What is solar/free chlorine process?
Solar/free chlorine process is an energy-efficient system for natural water treatment. Contamination of natural water (NW) by emerging contaminants has been widely pointed out as one of the main challenges to ensure high-quality drinking water.

Can halogenation improve the efficiency of organic solar cells?
This study demonstrates that finely tuning the OPV materials to reduce the bandgap-voltage offset has great potential for boosting the efficiency. Halogenation has proved an effective strategy to improve the power conversion efficiencies of organic solar cells but it usually leads to lower open-circuit voltages.

This article aims to highlight broad and important aspects of the hybrid SOEC-based solar hydrogen-generating technology, which utilizes a mixed-ion conductor capable of ...

Visible-light photocatalytic chlorite activation has emerged as an efficient oxidation process for micropollutant elimination. However, the in-depth mechanism of chlorite activation is not ...

Electrochemical energy conversion and storage systems are presently playing a lead role in the global energy

platform. This study reports the fabrication of a Hydroelectric Cell ...

The essential chemistry is an Fe-doped Ti4O7 anode that strengthens the electrophilicity of lattice oxygen to allow for site-selective chloride activation at remarkably ...

DOI: 10.1021/ACSCATAL.0C05496 Corpus ID: 236290252; Selective Catalyst for Oxygen Evolution in Neutral Brine Electrolysis: An Oxygen-Deficient Manganese Oxide Film ...

The electrolysis of copper chlorine and hydrogen chloride in step 1 of the process can occur at lower temperature and pressure ranges than high temperature water electrolysis, ...

Layered double perovskites are promising as solid oxide fuel cell electrodes because of favourable transport properties. Related layered materials are now used as high ...

The oxygen-deficient material has the intrinsic property of splitting water. It produces electricity by utilising the dissociated H+ /OH- ions on the oxygen-deficient surface of ...

The journey of ceramics in medicine has been synchronized with an evolution from the first generation--alumina, zirconia, etc.--to the third --3D scaffolds. There is an up-and-coming ...

The free energy profile has shown that vacancies" creation optimized the bonding strength of OH* with active sites. The generation of vacancies decreases the binding strength while the ...

Here, we present oxygen-deficient black ZrO2-x as a new material for sunlight absorption with a low band gap around ~1.5 eV, via a controlled magnesiothermic reduction in 5% H2/Ar from ...

The objective is to quantify the influence of a thinned shell and a hydrated shell on power generation potential resulting from aluminum oxidation. The goal is to engineer metal ...

Solar-microbial hybrid device based on oxygen-deficient niobium pentoxide anodes for sustainable hydrogen production+. Mingyang Li a, Xinjun He a, Yinxiang Zeng a, Meiqiong ...

Tungsten oxides, especially their trioxide forms (WO 3), are among its two stoichiometric oxide forms, i.e., WO 3 and WO 2.The WO 3 is an n-type wide band gap semiconductor material ...

Au nanoparticles can further enhance the full solar absorption of oxygen-deficient TiO2. The highest temperature can be arrived at 91 °C for 100 ppm 5% Au/TiO2-x, 26.6 °C ...

The analysis concluded that oxygen evolution is limited by the decomposition of CuCl 2 . The reaction was assumed to occur in two stages, with intermediate release of ...

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