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Novel copper oxides oxygen evolving catalyst in situ for electrocatalytic water splitting

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Highlights

- A novel Cu-C_i oxygen-evolution catalyst is synthesized in carbonate solution with Cu(I) complex.
- The catalyst has low oxygen evolution overpotential and high oxygen evolution rate for water splitting.
- It has wide application prospects for water splitting under mild conditions.

Abstract: A Cu-C_i oxygen-evolution catalyst (C_i is inorganic carbonate) is prepared from of the abundant elements copper. They are generated in situ in carbonate solution (pH 10.25) with copper(I) complex under mild conditions (room temperature, atmospheric pressure, and near-neutral solution). The result indicates that the prepared Cu-C_i catalyst is amorphous. The average oxygen-evolution rate is 33.88 $\mu\text{mol h}^{-1} \text{cm}^{-2}$. An oxygen evolution overpotential of 263.8 mV is required at a current density of 1 mA cm^{-2} . Factors affected catalytic activity during water splitting, including temperature

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