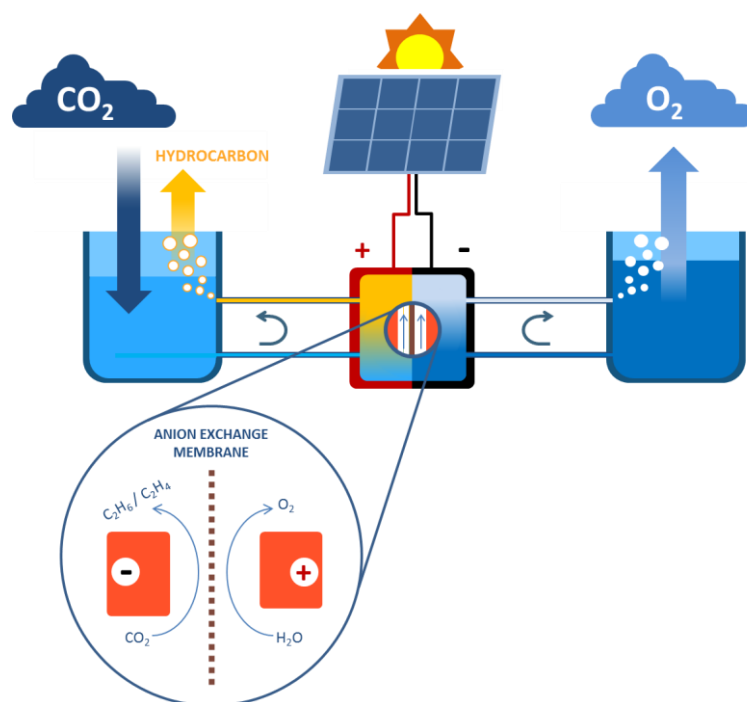


## Materials for high efficiency overall CO<sub>2</sub> reduction and use in a PV-EC system

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Selective electrochemical reduction of CO<sub>2</sub> into energy-dense organic compounds is a promising strategy for using CO<sub>2</sub> as a carbon source. However, efficient and selective earth abundant metal catalysts for the two reactions typically required for efficient overall CO<sub>2</sub> electrolysis, namely the oxygen evolution reaction (OER) and CO<sub>2</sub> reduction, are still scarce. We will present here the synthesis and electrochemical properties of a rationally designed nanostructured copper/copper oxide electrocatalyst for OER, and of a series of nitrogen-doped carbon and copper -based catalysts for the electroreduction of CO<sub>2</sub> under aqueous conditions[1-3] (Figure 1). We will illustrate their combination and use in a flow electrolyzer, and subsequent coupling with inexpensive PV cells [4].



**Figure 1:** PV-EC system for overall CO<sub>2</sub> reduction.

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