Poster Presentation

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Co(II) doped metal organic materials as efficient water oxidation catalyst

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Storing of electrical energy is still one of the greatest challenges to the scientific world. One of the easiest green paths that can be followed in order to store the energy is electrochemical splitting of water molecules to produce hydrogen and oxygen and their successive recombination to form water molecules. The water splitting reaction is associated with two half-cell reactions, namely hydrogen evolution reaction (HER) and oxygen evolution reaction (OER). However, slow kinetics of OER due the involvement of multiple proton-coupled electron transfer steps, can hamper the efficiency in promising technologies such as fuel cells, metal–oxygen batteries and solar cells. In order to overcome this slow kinetics of OER step several oxygen evolving catalysts have been employed such as some of the precious metal oxides such as IrOx and RuOx which are durable. But several difficulties are there with these catalysts as these are costly as well as scarce. As alternate options these precious metal oxides catalysts can be replaced by various transition metal ion electrocatalysts such as cobalt, nickel and manganese complexes. Among these, a large attention has been given to improve the cobalt-based electrocatalyst such as cobalt-complexes or cobalt ions with unsaturated sites confined in the metal organic framework. Here in a newly designed Cd(II)-MOF has been synthesized using a secondary bis(pyridyl)amide moiety and a dicarboxylic acid as building units and this Cd(II)-MOF possessing a network similar to inorganic boron-nitride structure. Interestingly the Cd(II)-MOF can be doped with Co(II) ions where this doped material can act as an efficient oxygen evolving catalyst in the course of water splitting reaction. So as electrocatalyst in OER, the Co(II) doped-MOF material will be a handy one as its preparation is inexpensive and easily abundant.

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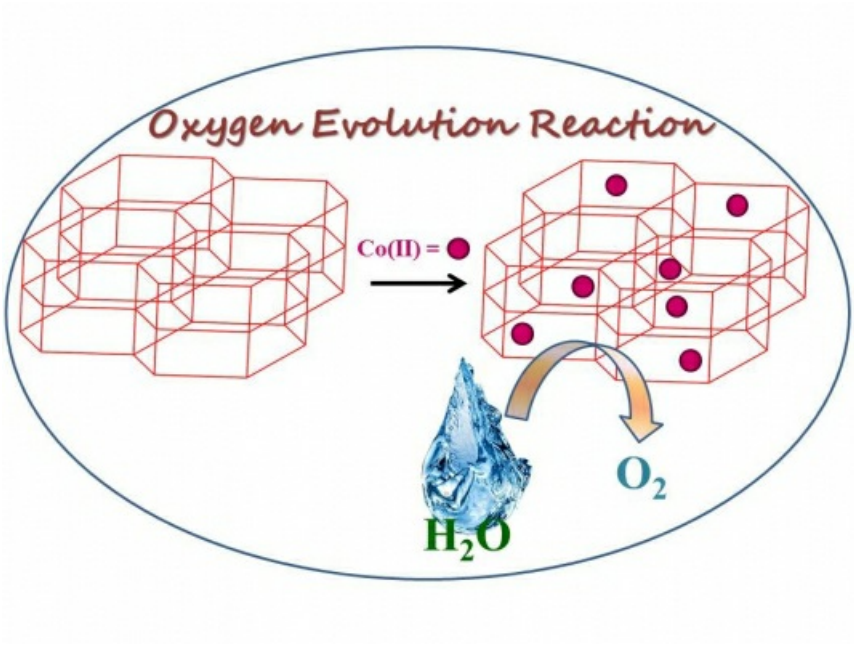

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