

$\text{CuW}_x\text{Mo}_{1-x}\text{O}_4$ photoanode for advanced solar water splitting

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Photoelectrochemical cell (PEC cell) has been issued when it comes to increasing energy demands as well as environment aspects. PEC cell is ideal system which converts unlimited solar to chemical energy in a form of hydrogen by dividing water. Present trends to split water efficiently is to choose low bandgap materials. In this regard, CuWO_4 has been studied owing to its higher conduction band(CB) than WO_3 thereby it contains lower bandgap around 2.3eV.

Even though CuWO_4 shows better performance in terms of visible active absorption, notorious drawbacks so called poor bulk and surface charge transportation still hinder desired solar decomposition. Several groups have carried out suitable actions like co-catalyst or heterojunction formations in order to solve carrier transport matters. But their effect is still too poor to improve.

One group explained that Mo can be readily substituted to W site owing to its analogous radius so that CB position can be moved to the downward. In this presentation, $\text{CuW}_x\text{Mo}_{1-x}\text{O}_4$ containing lower bandgap than CuWO_4 will be shown.