# Core-shell structure of $Fe_2O_3$ for photochemical water splitting

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Hematite(Fe2O3) is one of the promising PEC catalysis materials. It has several advantages and disadvantages. It is stable in aqueous solution. And the theoretical Solar to hydrogen efficiency is 16.8%. STH efficiency is 3.4% in TiO2 and 10.2% in WO3. It has proper bandgap about 2.1ev. The balance of visible light absorption is good and iron is abundant element. It means the cost is really cheap. However also it has several disadvantages. The hole diffusion length very short(2-4nm) and the kinetic of oxygen evolution reaction at surface is poor. To overcome theses problems, core-shell sturcture of hematite can be a candidate.