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(54) **PHOTO-ASSISTED ELECTROLYSIS**

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(57) **ABSTRACT**

An apparatus and method for performing electrolysis on materials such as water, thereby electrically separating the electrolyte into its elemental components. More specifically, according to a preferred aspect of the instant invention, there is provided an apparatus for splitting water into hydrogen and oxygen that uses a specially prepared cathode in conjunction with incident light energy to increase the efficiency of that process. A preferred embodiment of this apparatus uses the photo collector/cathode which comprises a thin layer of metal, preferably nickel, deposited by electroplating or a similar technique onto a conductive surface (e.g., a sheet of copper metal). During the electrolysis process, the cathode is irradiated with light, thereby reducing the amount of electrical energy necessary to separate a given quantity of electrolytic material.

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