

Artificial Photosynthesis: An Introduction

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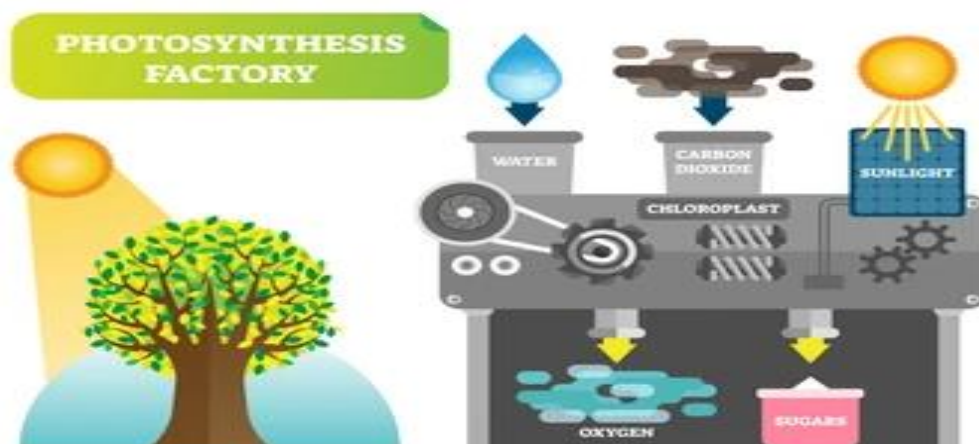


FIG.1. Artificial photosynthesis as a chemical process replicates natural photosynthesis to reduce anthropogenic carbon dioxide (CO_2), increase fuel security, and provide a sustainable global economy. Because of the development of some suitable technologies, we can develop artificial photosynthesis using artificial leaves for the efficient conversion of solar energy into H_2 and other fuels. This method may be a potential technology for H_2 production by mimicking natural photosynthesis by green leaves. Therefore, research has been carried out to harvest solar energy to produce H_2 by artificial photosynthesis. Plants split water molecules into hydrogen and oxygen. The oxygen is released in the atmosphere. The hydrogen is used to convert the carbon dioxide in the air into carbon-based organic molecules which act as food for the plant. The main idea behind artificial photosynthesis is to split the molecules and use the hydrogen molecule to replace gasoline or other non-renewable sources of energy. When a plant leaf absorbs sunlight and directly converts it into energy it is known as photosynthesis. The invention that comes closest to photosynthesis is a solar cell that is able to convert only 6% of the total sunlight. Artificial photosynthesis aims to recreate the process of photosynthesis to produce highly efficient energy in many applicable forms.