

Title: Artificial Photosynthesis

Abstract

The rapid growth of the world population and the propagation of a higher developed living standard cause a dramatic increase of the demand for resources. In order to counter this trend, we have to find approaches, efficiently using our resources. In our present world the natural photosynthesis is a crucial factor, regenerating compounds from CO₂ and sunlight but its energy efficiency is a limiting factor. Artificial photosynthesis is a new approach to improve this energy efficiency.

Our concept of an artificial photosynthesis is based on the combination of electrolysis and biocatalysis. At first CO₂ is transformed into an energetically superior gas mixtures by solar powered electrolysis. In a subsequent step this gas mixture is consumed by specially selected and designed bacteria strains, generating organic compounds. By this means bulk chemicals as well as specialties are accessible. Therefore this concept represents an additional interesting power to chemicals approach to preserve our current living standard in a sustainable manner.