The invention relates to quantum dots fabricated from semiconductors for light harvesting applications. A solar energy conversion efficiency of 4.8% is observed, which is significantly higher than biomass accumulation in photosynthesis.

**BACKGROUND**

Semiconductor nanocrystals (NCs) are nanometer sized semiconductor particles which have tunable size and shape. They are used in optical applications including light-emitting devices, lasers etc. Their applications in light harvesting devices include photovoltaic cells and photocatalysts. Conventional semiconductor NCs based light harvesting photovoltaic cells exhibit lower efficiencies. NCs have been used for photo-reduction of carbon dioxide to obtain organic compounds but they suffer from the drawback of low energetic yield.

**TECHNOLOGY**

The invention discloses device for photosynthesis of organics from aqueous organic salts using quantum dots. Particularly, the device is capable of converting salts of carbon dioxide into organic compounds in the presence of visible light and water. A solar energy conversion efficiency of 4.8% is observed, which is significantly higher than biomass accumulation in photosynthesis. This invention has been reduced to working prototype.

**COMMERCIALIZATION**

Indian Institute of Science has filed an international patent application as well as an application for patent grant before Indian Patent Office. This technology is available for licensing.