

Artificial leaf is a term coined for self-sustained devices that can generate fuel from energy of the sun. A process for this purpose is splitting water into hydrogen and oxygen where hydrogen can be used directly as fuel or can be converted into higher density fuels after reaction with CO₂. Low-cost generation of hydrogen is the challenge. In IPM, we have developed a low-cost device based on standard silicon solar cell technology and earth-abundant electrocatalysts that can split water with >11% solar to hydrogen conversion efficiency. This efficiency is larger than the 10% goal set by US Department of Energy for commercializing solar hydrogen generation technologies. In this presentation, we give an overview of hydrogen economy and its outlook in transportation industry followed by presenting our latest results.