

## Wet-chemical approach to fabricate visible-near infrared light harvesting photoelectrodes

Photoelectrochemical (PEC) water splitting is an ecofriendly and safer process to generate hydrogen and have good potential to resolve energy challenges by producing an environmental friendly fuel. We are exploring various earth abundant materials to develop photoelectrode for solar driven water splitting. The ZnO, TiO<sub>2</sub>, SnO<sub>2</sub>, CuO, Cu<sub>2</sub>O nanostructures,  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>, graphene quantum dots, CZTS nano-crystal are few examples, to apply in PEC water. The aim of our research is to harvest the wide solar spectrum in whole UV to NIR wavelength range. While, most of the research works are focused on only visible light harvesting, which is not an efficient way to convert solar energy into chemical fuel, as near-IR spectra consist ~ 50% energy of solar light. Therefore, we are directed to harvest this component of light either by designing nano-junction between wide bandgap materials with low bandgap materials (which have absorption in near-IR range) or with materials having photo up-conversion properties. For further details <http://kushwaha09.wixsite.com/ajay>

