

Solution-processed ZnTe fabrication for Solar Fuel production

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Among the various sustainable energy sources such as tidal, wind, nuclear, and so on, the light is the most promising alternative power as considering its inexhaustible fund and practical value with growing our concerns of energy requirements. The photoelectrochemical system is the ideal process to produce solar fuels with the desired materials, which meet the requirements; low band gap, suitable band alignment, stability and so on.

ZnTe is very an attractive p-type material with its band gap (2.25 eV) and band-alignments. Its highly negative position of conduction band provides a strong driving force to photo-generated electron for water and CO<sub>2</sub> reductions. Among various synthetic methods such as electrodeposition, colloidal synthesis and so on, ZnTe formation was formed by anion exchange reaction without any surfactant. Then fabricated ZnTe was applied into PEC tests for solar fuel production such as CO and H<sub>2</sub> from water and CO<sub>2</sub>. We believe that the ZnTe has lots of potentials as photocathode and it can be practical used photocatalyst after studying and modifying its morphology, junction, and so on.