

Fabrication of WS_{3-x} Thin Films as Photocathodes for Driving Photocatalyzed Water Splitting

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Abstract: A novel spin-coating method has been developed for the synthesis of WS_{3-x} thin films on transparent conductive substrates. These films, under external bias, have been shown to catalyze hydrogen gas evolution in 0.5M H₂SO₄(aq). By layering this p-type material onto a suitable oxygen-evolving catalyst, deactivation processes such as photobleaching can be prevented without the use of sacrificial additives, and both hydrogen and oxygen evolution can be sustained over extended durations of illumination.