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Abstract

Photoelectrochemical (PEC) hydrogen generation based on colloidal quantum dots (QDs) is very promising because of its high solar energy to fuel conversion efficiency and low fabrication costs. However, its commercial development is hindered by various challenges, including the widespread use of toxic heavy metal-based QDs as sensitizers. We report an environmentally friendly, high efficiency PEC device in which the photoanode consists of a mesoporous TiO₂ film sensitized with heavy metal-free, near-infrared (NIR) colloidal CuInSe_xS_{2-x} (CISeS) QDs. To reduce

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