Vanadium redox flow battery with TiO_2/CuO-Cu_2O photoanode.

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Solar energy, an infinite energy source, is spotlighted as a future energy source. and, development of photoelectrochemical cells is very promising. In this study, photoelectrochemical cells that work on vanadium electrolytes are designed by making photoelectrodes from photocatalyst materials. Photoelectrode is composed of a composite structure of TiO_2 and CuO. When light is irradiated to this photoelectrode, electrons are emitted from the photocatalyst to generate a photocurrent, and electrons that pass to the counter electrode react with vanadium ions to store sunlight. The characteristics of this photoelectrode are analyze with the electrical signal by measuring the current according to voltage, charge / discharge experiment, and impedance measurements. XRD is used to measure the composition of the photoelectrode, and UV-vis is used to analyze the absorbance of each photoanode.