

Development of Aligned Nanostructures Grown on Substrate by Hydrothermal Synthesis for Solar Hydrogen Production

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The construction of aligned crystalline nanostructures is an attractive and promising method to develop highly efficient energy conversion materials under solar light. Replacing the random or non-aligned nanostructure with an aligned or array topology decreases the density of grain boundaries and increases charge diffusion length in the axial direction of one-dimensional structure. In the present work, we successfully fabricate highly aligned CdS NW and CdSe(en)0.5 NS with one-dimensional structure (as described in the supporting information), CdSe NC and investigate how this aligned 1-D geometry could improve the performance of PEC cell. This aligned nanostructure shows higher photoelectrochemical responsibility than non-aligned nanowire nanostructure.