

Green-synthesized W-and Mo-doped BiVO₄ oriented along the {0 4 0} facet with enhanced activity for the sun-driven water oxidation

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Description

A green hydrothermal synthesis approach, which employs almost neutral pH conditions and ammonium carbonate as a structural directing agent, has been used for the preparation of W- and Mo-doped BiVO₄ powders with a monoclinic scheelite-like structure and preferential growth along the {0 4 0} facet. The crystal structure and morphology of the samples have been studied by means of XRD and FESEM analyses. The proper introduction of the W and Mo dopants in the lattice of BiVO₄ crystals has been confirmed from XRD and XPS analyses. Moreover, it has been shown that the superficial amount of W and Mo dopants (obtained by means of XPS) plays a more important role than the overall (bulk and surface) dopant quantities in the BiVO₄ (estimated by means of ICPMS analysis). The best of the so prepared materials demonstrated an extraordinary enhancement of the water oxidation rate under simulated ...

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