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【203】 Characterization of Sb₂Se₃ single crystal surfaces for photocatalysis

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Photocatalytic water splitting allows storing solar energy as chemical energy. For large scale application in photoelectrochemical (PEC) cells, electrode materials need to be efficient and stable. In this work we investigate single-crystalline antimony selenide (Sb₂Se₃), a p-type semiconductor with excellent light absorbing properties and promising stability towards photocorrosion in aqueous environment. We studied cleaved Sb₂Se₃ surfaces with respect to their structural and electronic properties by means of XPS, XPD, LEED, STM and ARPES. The samples cleave along the (100) planes and the surface shows a pronounced one-dimensional structure, reflecting the zig-zag stacking of ribbons in the bulk crystal structure.

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