# Document details - A novel sulphur decorated 1-D MoO<sub>3</sub> nanorods: Facile synthesis and high performance for photocatalytic reduction of hexavalent chromium





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## A novel sulphur decorated 1-D $MoO_3$ nanorods: Facile synthesis and high performance for photocatalytic reduction of hexavalent chromium(Article)

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### Abstract

In the present study, we report a simple approach for the fabrication of novel sulphur decorated $MoO_3$ nanorods (S@$MoO_3$ nanorods) by using simple solution process method for the very first time. The phase structural, morphology and optical properties of the as-prepared nanomaterials were comparatively characterized. The sulphur (S) nanosheets were well decorated on the surface of $MoO_3$ rods which was clearly observed from TEM images. The applicability of the as synthesized S@$MoO_3$ nanocomposite was demonstrated as superior photocatalyst for the photocatalytic reduction of toxic hexavalent chromium Cr(VI) to nontoxic trivalent chromium Cr(III) under visible light illumination. The photocatalytic reduction results suggested that the 1% of S@$MoO_3$ nanorods was exhibited excellent visible light photocatalytic activity efficiency compared to pure $MoO_3$, S and other S@$MoO_3$ nanocomposites. The enhancement in the photocatalytic performance of 1% S@$MoO_3$ nanorods was mainly attributed to the strong absorption in visible region and low recombination or high separation efficiency for photogenerated electrons and holes. The trapping experiments reveals that $O_2[rad]^-$ radical species was strongly supported for the photocatalytic reduction of Cr(VI). The present protocols reported open up an S decorated photocatalyst might be a potential candidate for Cr(VI) removal in environmental. © 2018 Elsevier B.V.

### Author keywords

Cr(VI) Nanorods Photocatalytic reduction S@$MoO_3$ Visible light photocatalyst

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