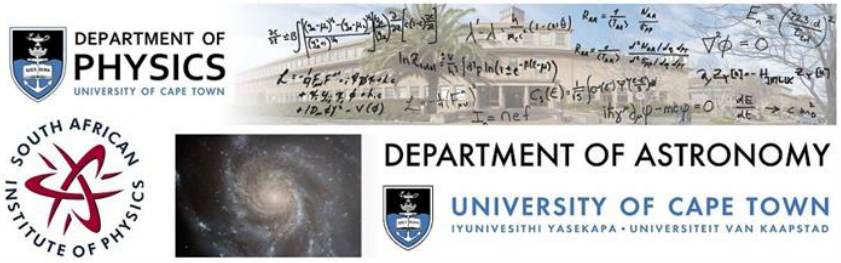

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Synthesis of nanostructured molybdenum disulfide (MoS2) for photodegradation of organic dyes from aqueous solution

Wednesday, 6 July 2016 16:10 (1h 50m)

Abstract content
   (Max 300 words)
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The increase in wastewater pollution of ground and surface water as a results of organic dyes and toxic metal ions have become a greater threat to human health and other organisms. Greater attention has been paid on removal of organic dyes from wastewater using two-dimensional (2D) nanomaterials. 2D nanomaterials such as transitional metal dichalcogenides (TMDs) have shown a greater potential towards wastewater treatment. Nanostructured MoS2 belongs to TMDs family and has received much research interest due to its versatile application in catalysis. Here, we present the facile hydrothermal route for synthesis of nanostructured MoS2 by using sodium molybdate and different sulphur source and capping agents as the precursors, and evaluation of its applications toward the photodegradation of organic dyes. As synthesized MoS2 nanostructured were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM), photoluminescence spectroscopy (PL), Raman spectroscopy, and UV–Vis spectroscopy. Rhodamine B and Methyl orange was chosen as a model for organic dyes and used to evaluate the photocatalytic performance of the MoS2 nanostructure under UV-Vis light. The prepared MoS2 nanostructure shows a greater potential in photodegradation of those organic dyes in water. Furthermore, we are fabricating heterostructure of MoS2 with other semiconductor nanomaterials for enhancement of photo-catalytic study.

Key words: Photodegradation, Rhodamine B, Methyl orange, Hydrothermal, Metal dichalcogenides.

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