

**Title:** Effect of Etchant Concentration on the Optical Properties and Surface Topography of MoO<sub>3</sub> Selective Solar Absorber Thin Films

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**Abstract**

A novel technique providing a cost effective sustainable wet chemical etching method of synthesizing black Moly thin films rapidly has been presented. A top- down method for fabricating MoO<sub>3</sub> has been investigated to understand the effect of chemical etchant concentration on the structural, morphological and optical properties of the thin films on Mo substrates. The XRD patterns demonstrated the formation of Tugarinovite MoO<sub>2</sub> films on Mo substrate after annealing at 500°C in a vacuum. In this work, we developed nanostructured MoO<sub>3</sub> on Mo substrate solar absorber, with a high solar absorptance of over 89%. These results suggest that solar absorbers made from refractory metal oxide nanostructures can be used for solar thermal application

**Keywords:**

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