

SAIP2013



Contribution ID : 269

Investigation of Phase Transitions in Tungsten Trioxide

Tuesday 09 Jul 2013 at 11:10 (00h20')

Abstract :

It is well known that tungsten trioxide shows temperature-dependant structural phases, starting from a mixture of triclinic-monoclinic symmetry at room temperature, and transitions to tetragonal symmetry above 900°C. However, the order of these transitions are not well understood which can predict if the phase transition is reversible. The allowed symmetries of the polymorphic modifications after the phase transitions are determined using group theoretical arguments in the framework of the Landau-Lifshitz theory of second-order phase transitions. The theoretical calculations predicted that the phase transition to the highest temperature phase is second-order and is therefore reversible, and this was verified using the experimental techniques of x-ray diffraction, Raman spectroscopy and thermogravimetric analysis.

Award :

Yes

Level :

PhD

Supervisor :

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Paper :

No

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Session classification : Theoretical

Track classification : Track G - Theoretical and Computational Physics

Type : Oral Presentation