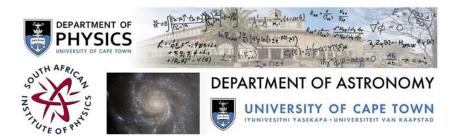
## **SAIP2016**



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## Effect of annealing temperature on LiMn2O4 nanostructures prepared by chemical bath method

Tuesday, 5 July 2016 16:10 (1h 50m)

Abstract content <br/> &nbsp; (Max 300 words)<br/> dry-<a href="http://events.saip.org.za/getFile.py/starget="\_blank">Formatting &<br/> &class="blank">Formatting &class="blan

LiMn2O4 powders were prepared by chemical bath method using ammonia solution as a catalyst. The effect of annealing temperature on the thermal analysis, structure, morphology and optical properties of LiMn2O4 nanostructures were investigated. The annealing temperatures were varied from 25 up to  $1000^{\circ}$ C. The thermogravimetric analyses (TGA) and differential scanning calorimeter (DSC) showed that the final yield decreases with an increase in the annealing temperature. The X-ray diffraction (XRD) patterns of the LiMn2O4 nanostructures correspond to the various planes of a spinel LiMn2O4 phase. It was observed that the secondary phases decreases with an increase in annealing temperature. The diffraction peaks increase in intensity with an increase in annealing temperature. The estimated average grain sizes calculated using the XRD spectra were found to be in the order of  $50 \pm 1$  nm. It was observed that the estimated average grain sizes increases with an increase in annealing temperature. The surface morphology study revealed the irregular nanoparticle. The irregular nanoparticle increased in size with an increase in annealing temperature. The UV-Vis spectra showed a red shift with an increase in annealing temperature. The band gap energy of ZnO was also found to decrease.

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