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## Effect of annealing temperature on LiMn<sub>2</sub>O<sub>4</sub> nanostructures prepared by chemical bath method

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**Abstract content**   
 (Max 300 words)   
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LiMn<sub>2</sub>O<sub>4</sub> 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 LiMn<sub>2</sub>O<sub>4</sub> nanostructures were investigated. The annealing temperatures were varied from 25 up to 1000°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 LiMn<sub>2</sub>O<sub>4</sub> nanostructures correspond to the various planes of a spinel LiMn<sub>2</sub>O<sub>4</sub> 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.

**Apply to be considered for a student award (Yes / No)?**

no

**Level for award (Hons, MSc, PhD, N/A)?**

N/A

**Main supervisor (name and email) and his / her institution**

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**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

yes

**Please indicate whether<br>this abstract may be<br>published online<br>(Yes / No)**

yes

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