

## **EFFECT OF SUBSTITUTION OF Al<sup>3+</sup> into La<sub>0.67</sub>Sr<sub>0.33</sub>MnO<sub>3</sub> SYSTEM USING SOL-GEL METHOD**

M.S.Zulfakar<sup>1</sup>, H. Abdullah<sup>1\*</sup>, S.Shaari<sup>2</sup> and Z.Zalita<sup>3</sup>

<sup>1</sup>*Department of Electrical, Electronics and Systems Engineering,  
Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia,  
43600 Bangi, Selangor, Malaysia*

<sup>2</sup>*Institute of Microengineering and Nanoelectronics (IMEN), Universiti Kebangsaan  
Malaysia, 43600 Bangi Selangor, Malaysia*

<sup>3</sup>*School of Applied Physics, Faculty of Science and Technology, Universiti Kebangsaan  
Malaysia, 43600 Bangi, Selangor, Malaysia.*

*Corresponding author: [huda@vlsi.eng.ukm.my](mailto:huda@vlsi.eng.ukm.my)\**

### **ABSTRACT**

Thin film samples of La<sub>0.67</sub>Sr<sub>0.33</sub>Mn<sub>1-x</sub>Al<sub>x</sub>O<sub>3</sub> were synthesized using sol-gel method with  $x = 0.00, 0.15$  and  $0.30$ . Nitric acid, triethanolamine (TEA) and distilled water were used as solvent and stabilizer agent. All the samples were calcined at  $650^{\circ}\text{C}$  and  $750^{\circ}\text{C}$  for half an hour. The structural morphology was investigated via x-ray diffraction (XRD) and scanning electron microscope (SEM). X-ray diffraction patterns show rhombohedral distorted perovskite structures. The scanning electron microscope showed the average grain size was decreased as the level of doping concentration increased and structural orientation is more ordered. Magnetic properties were investigated using vibration sample Magnetometer (VSM) at room temperature. Analysing all the samples show when magnetic field is getting higher, magnetization of the samples decreased.

*Keywords: Sol-gel method; rhombodehral; perovskite structures; magnetization;*

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