

## Analisis Struktur kristal paduan $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$ dengan menggunakan difraksi sinar X ( $x=0,02$ ; $x=0,04$ ; $x=0,06$ ; $x=0,08$ ; $x=0,10$ ; $x=0,12$ )

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### Abstrak

Analisis Struktur kristal paduan  $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$  telah dilakukan sintesis dan karakterisasi paduan  $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$  ( $x=0.02$  ;  $x=0.04$  ; $x=0.06$  ; $x=0.08$   $x=0.10$  ; $x=0.12$  ). Sintesa bahan menggunakan metode reaksi padatan (solid state method) dari oksida-oksida penyusun  $\text{La}_2\text{O}_3$ ,  $\text{CaCO}_3$ ,  $\text{MnO}_2$  dan  $\text{TiO}_2$ . Campuran ini di milling selama 5 jam ,15 jam dan 25 jam dan proses pemanasan dengan variasi suhu  $1000^\circ\text{C}$ ,  $1100^\circ\text{C}$  dan  $1200^\circ\text{C}$  selama 12 jam.

Hasil pengukuran dengan difraksi sinar-X (XRD) menunjukkan bahwa sintesa bahan atau paduan  $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$  fasa tunggal (single phase) dengan struktur kristal Orthorombik, space group Pnma (No.62) dan parameter kisi untuk  $x=0,08$  sebagai berikut :  $a = 5,4786(4) \text{ \AA}$ ;  $b = 7,7503(1) \text{ \AA}$ ;  $c = 5,4837(6) \text{ \AA}$ .

.....Synthesis and characterization of the Giant Magnetoresistance on the  $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$  compound have been performed. Synthesis on the  $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$  material use solid state method from compiling oxides of  $\text{La}_2\text{O}_3$ ,  $\text{CaCO}_3$ ,  $\text{MnO}_2$  dan  $\text{TiO}_2$ . This mixture milled during 5 hour, 15 hour and 25 hour and sintered at  $1000^\circ\text{C}$ ,  $1100^\circ\text{C}$  and  $1200^\circ\text{C}$  for 12 hour.

The result of XRay diffraction measurement show that the materials is single phase i.e  $\text{La}_{0.67}\text{Ca}_{0.33}\text{Mn}_{1-x}\text{Ti}_x\text{O}_3$  with the crystal structure of orthorhombic, space group is Pnma (No.62) and lattice parameter for  $x=0.008$  are  $a = 5,4786(4) \text{ \AA}$ ;  $b = 7,7503(1) \text{ \AA}$ ;  $c = 5,4837(6) \text{ \AA}$ .