

Yttrium aluminum monoclinic (YAM) synthesized by high energy ball milling

ABSTRACT

The structural of the mixture of Y_2O_3 - Al_2O_3 has been studied using X-ray diffraction and ^{27}Al MAS NMR. The sample was synthesized by high energy ball milling process. The polycrystalline YAM powder was form together with impurity YAP and Y_2O_3 when heated at $1100^{\circ}C$ as confirm by XRD and NMR. Increasing heating temperature up to $1400^{\circ}C$ did not seem enough to completely transform Y_2O_3 and $-Al_2O_3$ into YAM phase as the grain growth occur and increase the diffusion distance in solid state reaction.

Keyword: $Y_4Al_2O_9$; High energy ball milling; XRD; ^{27}Al MAS NMR