NANOCRYSTALLIZATION OF YBa$_2$Cu$_3$O$_{7-\delta}$
SUPERCONDUCTOR IN VARIOUS SINTERING PERIODE AND TEMPERATURE

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Abstract

Superconducting \( \text{YBa}_2\text{Cu}_3\text{O}_{7-\delta} \) nanocrystal has been synthesized using wet mixing method. This research is used to form superconducting \( \text{YBa}_2\text{Cu}_3\text{O}_{7-\delta} \) with nanometer scale. According to XRD analysis, the largest volume fraction is \( 96,38 \pm 1,31 \% \) hours with crystal size is \( 149,05 \pm 2,45 \text{ nm} \), as a result of sintering at temperature \( 950^\circ \text{C} \) for 6 hours. Sintering at \( 700^\circ \text{C} \) seems to be an effective process to result in superconducting \( \text{YBa}_2\text{Cu}_3\text{O}_{7-\delta} \) nanocrystals having size of \( 33,01 \pm 5,95 \text{ nm} \) although the volume volume fraction still \( 10,68 \pm 1,24 \% \).

Keywords: Superconducting. Nanocrystal