

## The Optimization of Some Experimental Parameters in the Nitrate Decomposition Method

M.H. Arada<sup>1\*</sup> and A. Amira<sup>2</sup>

<sup>1</sup>Laboratoire d'étude des matériaux (LEM), University de Jijel, Algeria

<sup>2</sup>Laboratoire des Essais Non Destructif par ultrason (LEND), University de Jijel, Algeria

This work presents a novel approach for preparation the oxygen deficient LaBaCaCu<sub>3</sub>O<sub>y</sub> compound (La1113): temperature and duration optimization when applying the nitrate decomposition method. The XRD results reveal the presence of triple perovskite structure LaBaCaCu<sub>3</sub>O<sub>y</sub> as a dominant phase crystallizing in the tetragonal system of the space group P4/mmm ( $a = 3.873(7) \text{ \AA}$ ;  $c = 11.595(4) \text{ \AA}$ ). The SEM observation shows a low porosity while EDAX data indicates the presence of the basic elements (La, Ba, Ca, Cu and O). The compound superconducting character is confirmed by AC susceptibility measurements with  $T_c = 63\text{K}$ .

**Keywords:** Optimization of nitrates decomposition method, X-Ray diffraction (XRD), Energy Dispersive Analysis of X-rays (EDS or EDAX), Superconductors.