

## MOD-processed GdBCO Films on the LaAlO<sub>3</sub> (001) Substrates

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We have fabricated Gd<sub>1+x</sub>Ba<sub>2-x</sub>Cu<sub>3</sub>O<sub>7-δ</sub> (GdBCO) films on LaAlO<sub>3</sub> (001) single crystalline substrate by the metal-organic deposition using trifluoroacetates (TFA-MOD). The solutions obtained by dissolving GdBCO powder into the TFA solvent were coated on the substrates by spin coating, and the gel films were calcined at the temperature up to 400°C in humid oxygen atmosphere. Calcined films were fired again at various high temperatures to form GdBCO phase. We also controlled the supplying time of water vapor and oxygen partial pressure during the firing process. Optimal processing conditions resulted in GdBCO films possessing high critical temperature ( $T_c$ ) over 90 K. The microstructure and superconducting properties of films were found strongly dependent on the firing conditions and nominal compositions. The relationship between processing parameters, microstructure, and superconducting properties of GdBCO films will be discussed. This work was supported by a grant from Center for Applied Superconductivity Technology of the 21st century Frontier R&D Program funded by the Ministry of Science and Technology, Republic of Korea.

Keywords: GdBCO, TFA-MOD, thin films, critical temperature