Modeling of electrical properties in the fabrication of layered superconducting thin films

ABSTRACT

The Pulse laser deposition (PLD) is a sole tool that is used to develop fine quality superconducting (YBCO) epitaxial films. The description and devices application aspect of the PLD on high temperature superconducting epitaxial films have an important role in the field of superconductivity. In the present study, thin films fabrication by PLD, buffer layers and electrical properties have been probed numerically with computer simulations. The electrical transport properties are discussed in term of thermally-activated flux motion model. The present study concludes that the plume dynamics is important in fabricating high quality epitaxial films thus improving the superconducting electrical transport properties.

Keyword: Absorption coefficient; Laser plasma; Pulse laser deposition; YBCO