Infiltration Process and Liquid Concentration Effect on the Microstructure of Y211

Asif Mahmood*[,a], Chan-Joong Kim[a]

[a] *Nuclear nanomaterials development laboratory, Korea Atomic Energy Research Institute, Daejon, Korea*

Melt processing of $Ba_3Cu_5O_8$ is done by infiltrating liquid phases into an Y211 preform and allowing the growth of Sm-123 to take place. In the present study, an attempt was made to evaluate the liquid concentration effect, growth mechanism of the YBCO crystal and seeded growth process on Y211. It is observed that the particle size and distribution of the Y211 inclusions within the final Y123 specimens fabricated by the liquid infiltration and seeded growth process is solely determined by the particle size and distribution of Y-211 preform. Using optical and scanning electron microscopes, it has been further observed that the particle size of Y211within the microstructure of YBCO superconductor decreases and the tendency of making the crystal increase with the increase of $Ba_3Cu_5O_8$ contents.

Key words : Infiltration, particle size, and microstructure