

# Fault Current Limiting Characteristics Dependent on Winding Direction between 1<sup>st</sup> and 2<sup>nd</sup> Winding of Flux-Lock Type SFCL

Sung-Hun Lim<sup>\*</sup>, Hyo-Sang Choi<sup>\*\*</sup>, Jong-hwa Lee<sup>\*</sup>, Seok-Cheol Ko<sup>\*</sup>,  
Hyeong-Gon Kang<sup>\*\*\*</sup>, Byoung-Sung Han<sup>\*</sup>

*School of Electronics&Information Engineering, Chonbuk National Uni.<sup>\*</sup>*

*Electrical Engineering Dept. Chosun Uni.<sup>\*\*</sup>*

*Semiconductor Physics Research Center<sup>\*\*\*</sup>*

The characteristics of fault current limiting of flux-lock type high-Tc superconducting fault current limiter(SFCL) dependent on winding direction of coil 1 and 2 were investigated. YBCO thin film was used as current limiting element consisting of the flux-lock type SFCL. The fault current limiting operation, based on each experimental waveform, was analyzed in case of the subtractive polarity winding and the additive polarity winding. The equivalent circuit from flux-lock type SFCL's structure was derived and its operation was analyzed using FDM(finite difference method), one of numerical analysis. It was confirmed from simulation results and experimental ones that the fault current limiting operation depended on winding direction between coil 1 and 2.

keywords : flux-lock type high-Tc superconducting fault current limiter(SFCL), winding direction, subtractive polarity winding, additive polarity winding, finite difference method