구두발표 III-3

Computer simulated magnetic properties of ($Nd_2Fe_{14}B$ + Fe) based nanocomposite

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Abstract

Two phased nanocomposite magnets composed of magnetically strong $Nd_2Fe_{14}B$ and soft Fe grains are simulated in terms of magnetic grain size and volume distribution. The model grain size of each phase was simulated by changing simultaneously from 10 to 40 nm varying with the volume fraction of the hard phase from 50 to 70 %, and the simulated hysteresis behaviors were compared with experimental results. Basically the simulated hysteresis curve of the model having the grain size of hard magnetic phase, $Nd_2Fe_{14}B$, of 10nm and volume fraction of 70 % was well matched with those of experimental behavior. Actually the comparison for the $Nd_{8\sim9}Fe_{86-x}$(transition element x)B_6 material was proved to be realistic explaining the nanocomopsite behaviors. Simulated hysteresis curves related with domain rotations will be displayed.