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Bulk magnetic hardening in Cu-added (SmCo5)1-x(Sm2Co17)x cast alloys[1] GEORGE HADJIPANAYIS, ALEXANDER GABAY, YONG ZHANG, MELANIA MARINESCU, KYRIAKOS CHRISTODOULIDES, Department of Physics and Astronomy, University of Delaware, Newark, DE 19716 — In attempt to establish a possible link between the magnetic hardening in $Sm(Co,Cu)_5$ magnets and the commercial "2:17" magnets, we have investigated a series of homogenized ternary Sm-Co-Cu alloys with composition between $Sm(Co,Cu)_5$ and Sm_2Co_{17}. The coercivity of the alloys with $x < 0.75$ can be increased by isothermal aging without separation into 1:5 and 2:17 phases. The increase in coercivity is accompanied by an increase in the Curie temperature. A similar effect of low-temperature aging has also been observed in Sm-Co-Ni, Sm-Co-Fe-Cu and Pr-Co-Fe-Cu alloys. A different pattern of magnetic hardening can be observed in the alloys with $x > 0$ which were slowly cooled from 800 to 350 ^{o}C. In this case, the initial hexagonal structure transforms into the cellular structure of the 1:5 and 2:17 (rhomb.) phases. In the alloy with $x = 0.25$, the two types of magnetic hardening may lead to the same room temperature coercivity despite the very different microstructures. The correlation between the observed microstructures and coercivity will be discussed.

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