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High performance isotropic R-(Co,Fe)-C magnets by melt spinning (R= Sm, Pr)[1] DILARA SULTANA, University of delaware, ALEXANDER GABAY, GEORGE HADJIPANAYIS — In our search of high performance isotropic magnets for high temperature applications a large variety of quasiternary $R_x(CoFe)_{100}$-x-yC_y alloys with x=10.5-15,y = 0-4.5 were produced by melt-spinning. The alloys were characterized by X-ray diffraction and Scanning and transmission electron microscopy. The Fe substitution for Co and Pr substitution for Sm increases magnetization, while the C addition increases the coercivity. Remanence values of more than 100 emu/g and coercivity of 13 kOe were obtained. The hard magnetic properties are associated with the disordered hexagonal 2:17 compound. The microstucture properties are studied to optimize the properties for high temperature applications. The effects of the alloying elements (Pr,Fe,C) , quenching rate and heat treatments are analyzed and coercivity mechanism are discussed.

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