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**Grain-boundary doping dependence of irreversible magnetization in $Bi_2Sr_2CaCu_2O_{8+\delta}$ : Evidence for pseudogap correlation as a competing order on superconductivity** G.C. KIM, Department of Physics, Pusan National University, Pusan 609-735, Korea, M. CHEON, Department of Physics, State University of New York at Buffalo, NY 14260-1500, USA, J.H. LEE, Y.C. KIM, D.Y. JEONG, Department of Physics, Pusan National University, Pusan 609-735, Korea — High temperature superconductors reveal several unusual behaviors, which can not be explained by conventional metal theories. Among them, the nature of the pseudogap correlation on superconductivity is very important, because it is believed that the pseudogap correlation is associated closely with the origin of high temperature superconductivity. The best way to solve this problem is treating a system where the pseudogap correlation and superconductivity coexist. Here, we report on the nature of a pseudogap correlation through investigating the irreversible magnetization of systems synthesized by annealing underdoped and overdoped polycrystalline $Bi_2Sr_2CaCu_2O_{8+\delta}$ at a low temperature in different atmospheres

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