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**Comparative study of flux pinning characteristics of  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$  and  $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$  single crystals<sup>1</sup>**

NORIKO CHIKUMOTO, Superconductivity RSCH LAB, ISTECS, WATARU HIRATA, SHIGEKI MIYASAKA, SETSUKO TAJIMA, Osaka Univ., KEIICHI TANABE, Superconductivity RSCH LAB, ISTECS — We have studied the magnetization behavior of iron-pnictide superconductor,  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$  (Co-doped Fe122) with various Co doping and  $\text{BaFe}_2(\text{As}_{0.65}\text{P}_{0.35})_2$  (P-doped Fe122) single crystals. All of the Co-doped Fe122 crystals showed a very pronounced “peak effect” in all the temperature range, irrespective of doping state. It is important to mention that a similar peak effect was previously reported for  $\text{REBa}_2\text{Cu}_3\text{O}_y$ . In order to get further insight into the pinning mechanism of the present system, we analyzed the pinning force density  $F_p = J_c B$ . A good scaling of the  $F_p$  versus the reduced field,  $b = B/B_{irr}$ , was established for all the Co-doped Fe122 crystals and the scaling curves were well fitted with the function given by  $F_p/F_{p,max} = Ab^p(1-b)^q$ , where  $A$  is a numerical parameter,  $p$  and  $q$  are describing the actual pinning mechanism. It was found that  $p$  value monotonically increases with  $x$ , while  $q$  value decreases with  $x$ . On the other hand, P-doped Fe122 did not show “peak effect”. We will discuss about the possible pinning mechanism causing the peak effect.

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