

Abstract Submitted  
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**High critical current density in BaAs<sub>2</sub>(Fe,Co)<sub>2</sub> thin films up to 35 T**  
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J.W. PARK, C.B. EOM, Y. ZHANG, C.T. NELSON, X.Q. PAN — In the Co-doped  
BaFe<sub>2</sub>As<sub>2</sub> thin films we intensively investigated field and angular dependences of  $J_c$   
down 4.2 K in high field. We found a strong correlated c-axis pinning and  $J_c$  for field  
along the c-axis exceeds  $J_c$  for H//ab plane up to  $\sim 20$ T, inverting the expectation of  
the Hc<sub>2</sub> anisotropy. As a consequence the angular dependence is very weak and  $J_c$  is  
still over  $10^5$  A/cm<sup>2</sup> at 20T. Moreover the maximum pinning force  $F_p(4.2K)$  reaches  
35-40 GN/m<sup>3</sup> at 15-20T depending on the field configuration, indicative of strong  
high-field vortex pinning. High resolution transmission electron microscopy reveals  
that the strong vortex pinning is due to a high density of non-superconducting Ba-  
Fe-O nanocolumnar defects whose diameter is  $\sim 2\xi$ , perfect conditions for a strong  
pinning.

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