Abstract Submitted
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Vortex Pinning and Lower Critical Field Behavior of Overdoped Ba0.2K0. 8Fe2As2[1] BING SHEN, MAXIME LEROUX, YONGLEI WANG, XU LUO, VITALII VLASKO-VLASOV, ALEXEI KOSHELEV, ZHILI XIAO, ULRICH WELP, WAI-KWONG KWOK, Argonne Natl Lab — We report on magneto-optical (MO) and Hall magnetometery measurements on single crystals of $Ba_{0.2}K_{0.8}Fe_2As_2$. The MO measurements demonstrate that the vortices prefer to stabilizing in the center of the sample upon penetration indicate of week pinning in these crystals. We determine the lower critical fields (H_{c1}) from the local magnetization using a Hall probe array. Below 2 K, an apparent sudden increase of H_{c1} is observed which we associate with the surface barrier effect. The behavior of temperature dependence of Hc1 above 2 K can be understood in model of a nodal gap structure of overdoped $Ba_{0.2}K_{0.8}Fe_2As_2$.

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