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Penetration Depth in Single Crystals of Nd(Fe,Co)As(O,F) Superconductors. H. KIM, C. MARTIN, R.T. GORDON, M.A. TANATAR, M.E. TILLMAN, S. KIM, S.L. BUD'KO, P.C. CANFIELD, R. PROZOROV — Iron arsenide superconductors, with the general formula $RFeAsO_{1-x}F_x$ (R=Nd,Sm,Pr,Gd), exhibit the highest transition temperatures among the compounds of the pnictide family, in excess of 50 K. London penetration depth studies performed on single crystals, grown under high pressure with nominal fluorine content x=0.1, have revealed a nodeless superconducting state with a modestly anisotropic gap[1]. Since doping is one of the most efficient ways to perturb the superconductivity, we explore here the evolution of the London penetration depth with doping, achieved by F substitution on O sites and by Co substitution on Fe sites. Notable differences in the superconducting transition temperatures for the two sets of crystals suggests the importance of impurity scattering for superconductivity in these compounds. Systematic variation of the London penetration depth with doping will be discussed.

[1]C. Martin *et al.*, arXiv:0807.0876

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