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**Effect of annealing on the local structure of Fe and Co in CoFeB/MgO based magnetic tunnel junction: An extended X-ray absorption fine structure study** ABDUL RUMAIZ, Brookhaven National Laboratory, JOSEPH WOICIK, NIST, WEIGANG WANG, Johns Hopkins University, CHERNO JAYE, NIST, HASSNAIN JAFFARI, C.L CHIEN, JEAN JORDAN-SWEET, IBM T.J. Watson Research Center, JOHN XIAO, University of Delaware — The evolution of the local structure of Fe and Co as a function of annealing time in CoFeB/MgO/CoFeB magnetic tunnel junctions was studied using extended x-ray-absorption fine structure (EXAFS). EXAFS indicates B depletion and crystallization of the CoFeB layers within a few seconds of the post growth high temperature anneal. The decrease in first-shell Debye–Waller factor and hence the increase in structural order during annealing explains the increase in tunnel magnetoresistance observed as a result of post deposition annealing. Although the diffusion of B has also been confirmed by several other experiments, there has not been much consensus on where the B diffuses after high temperature anneal. Recent results from B Near edge x-ray absorption fine structure (NEXAFS) will also be discussed.

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