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**The metallic screening of the interfacial dipole field in multiferroic Bi6Fe2-xCoxTi3O18 thin films** XIAOFANG ZHAI, YU YUN, CHAO MA, HAOLIANG HUANG, DECHAO MENG, JIANLIN WANG, ZHENGPING FU, RANRAN PENG, YALIN LU, University of Science and Technology of China — The demand for superior room-temperature multiferroic materials pushes high-quality fabrication of novel Aurivillius-type complex oxides with a goal of revealing the intrinsic room temperature multiferroic properties. We have found a new route to fabricate single-crystalline quality multiferroic Bi6Fe2-xCoxTi3O18 thin-films utilizing a metallic screening effect. The films exhibit abrupt interfaces and greatly enhanced crystalline quality on conductive bottom layers while mixed types of interfaces on insulating bottom layers. The enhanced single-crystalline quality is explained by a metallic screening effect that compensates the diverging dipole field originating from the symmetry breaking at the interface. The films on the conductive bottom layers also exhibit an enhanced ferromagnetic spin coupling and a strong vertical piezoelectric polarization switching. This study demonstrates that screening the interface dipole can be crucial to fabricate high-quality thin films and then multiferroic devices.

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