

Supporting information

for

Title: Metamagnetism stabilized giant magnetoelectric coupling in ferroelectric $x\text{BaTiO}_3$ -(1- x) BiCoO_3 solid solution

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1.

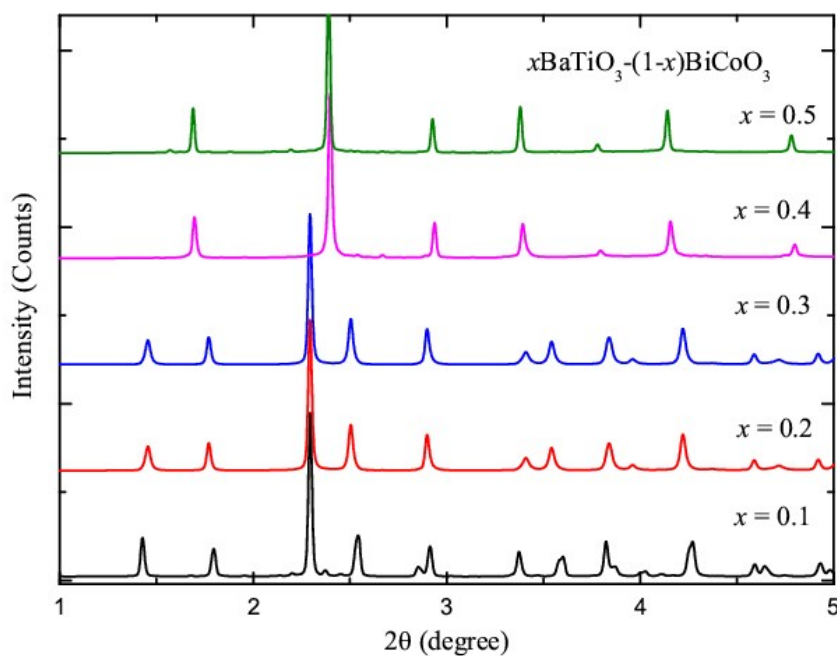
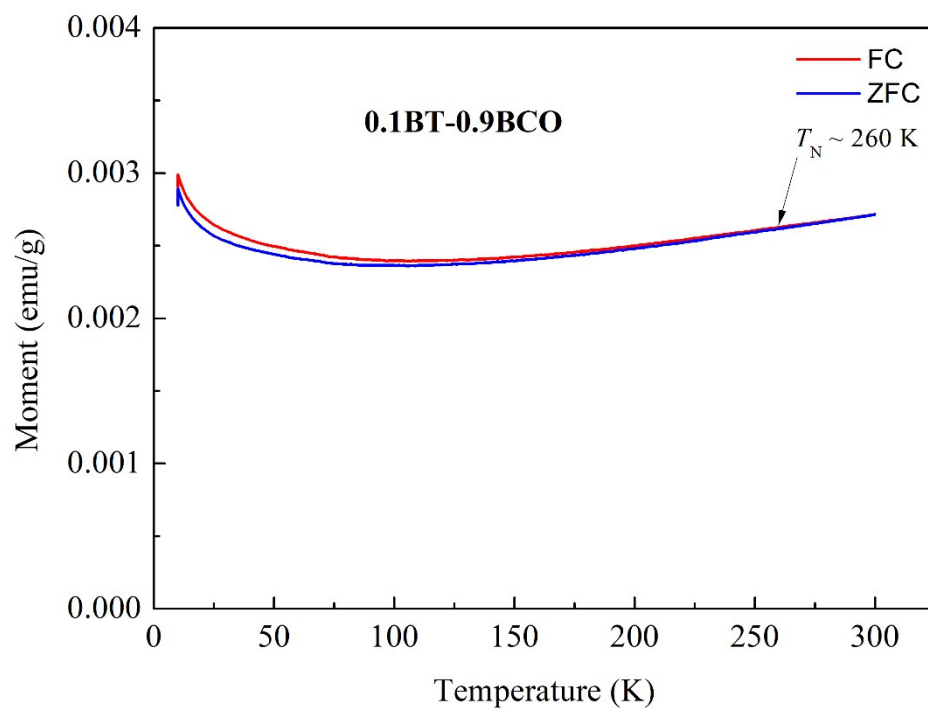
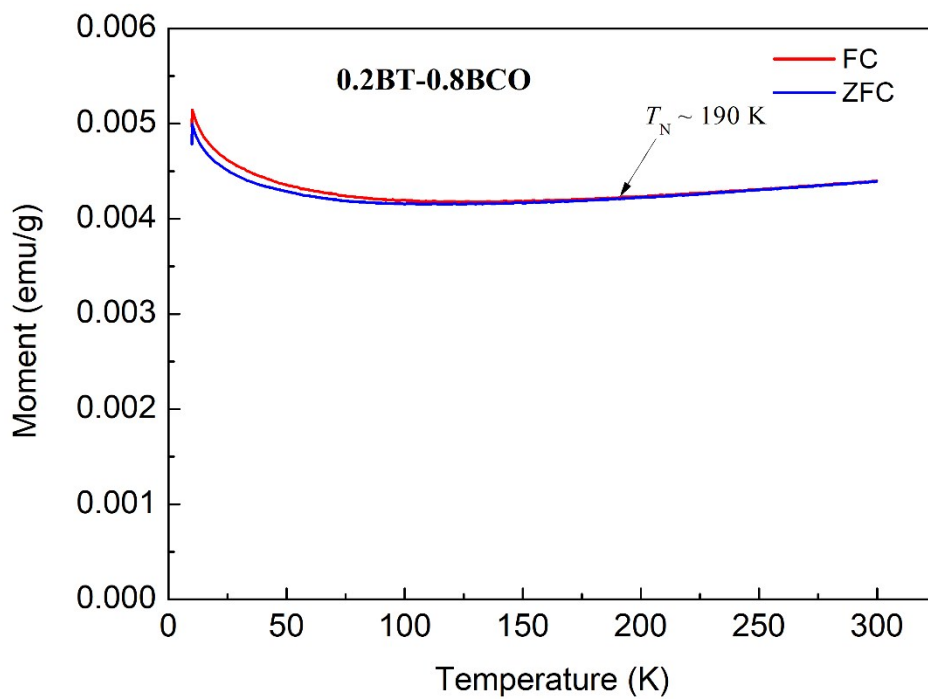


Figure S1. SXRD data for $x\text{BaTiO}_3$ -(1- x) BiCoO_3 ($x = 0.1 - 0.5$)

2. (a)



(b)



(c)

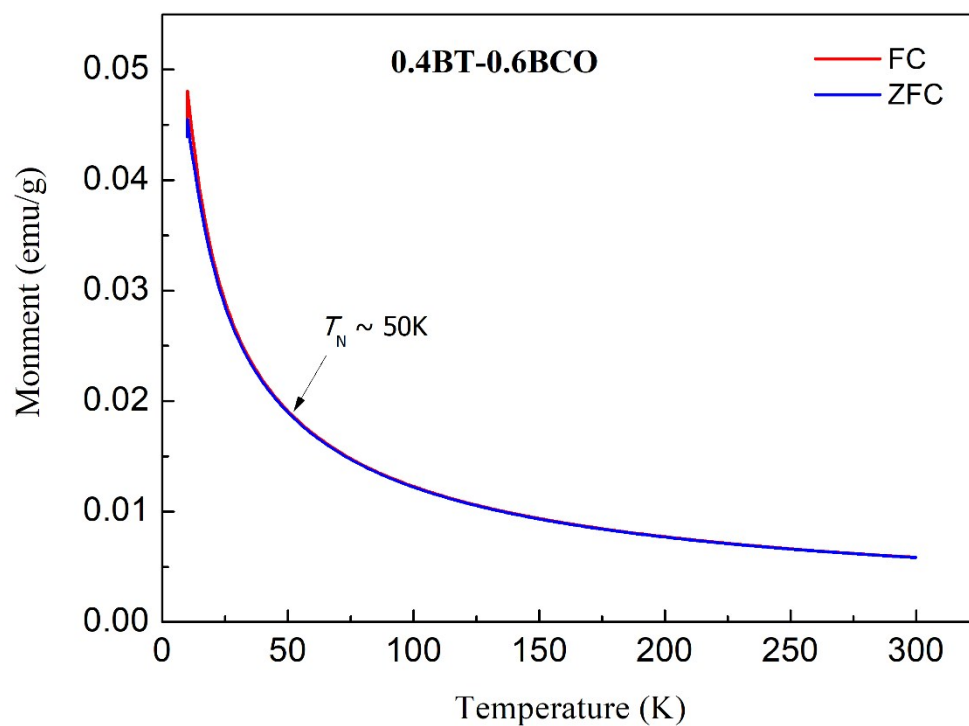
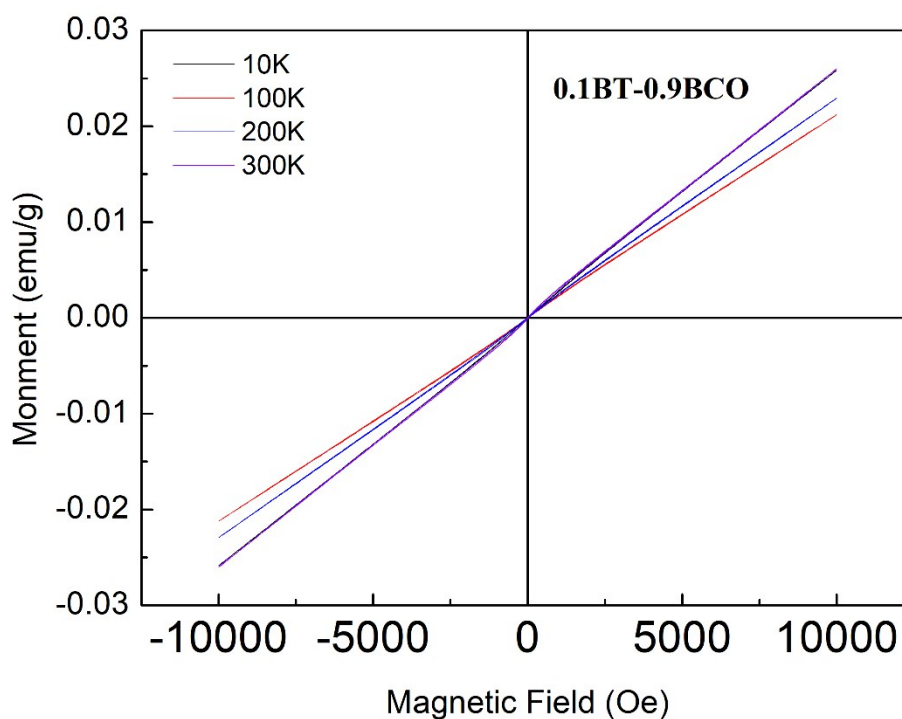
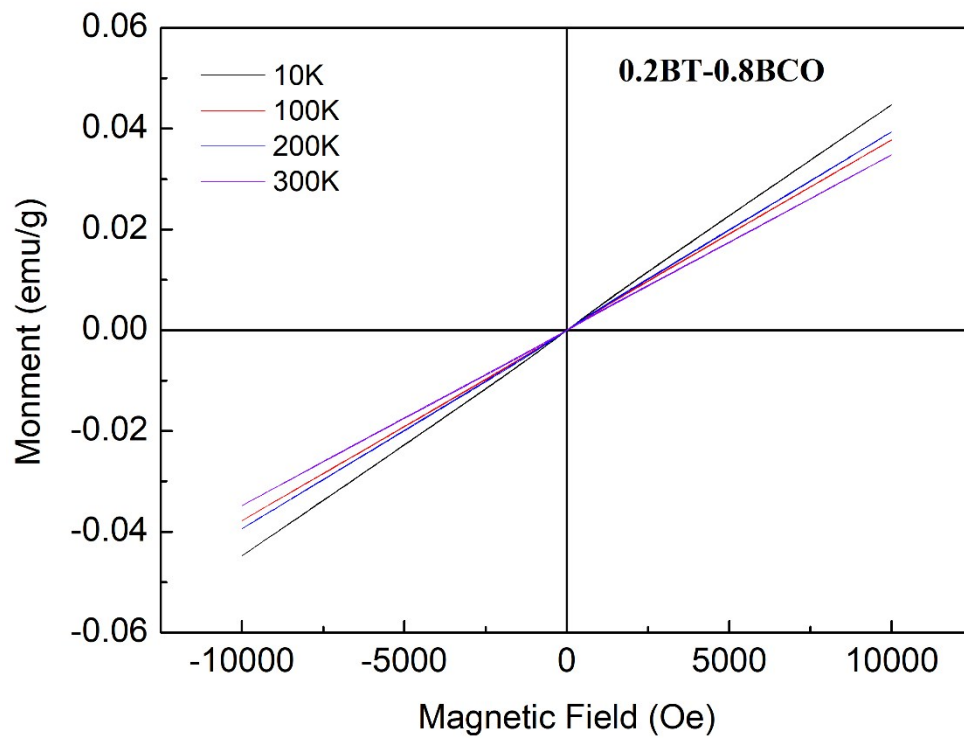


Figure S2. ZFC/FC magnetization for (a) 0.1BT-0.9BCO (b) 0.2BT-0.8BCO (c) 0.4BT-0.6BCO

3. (a)



(b)



(c)

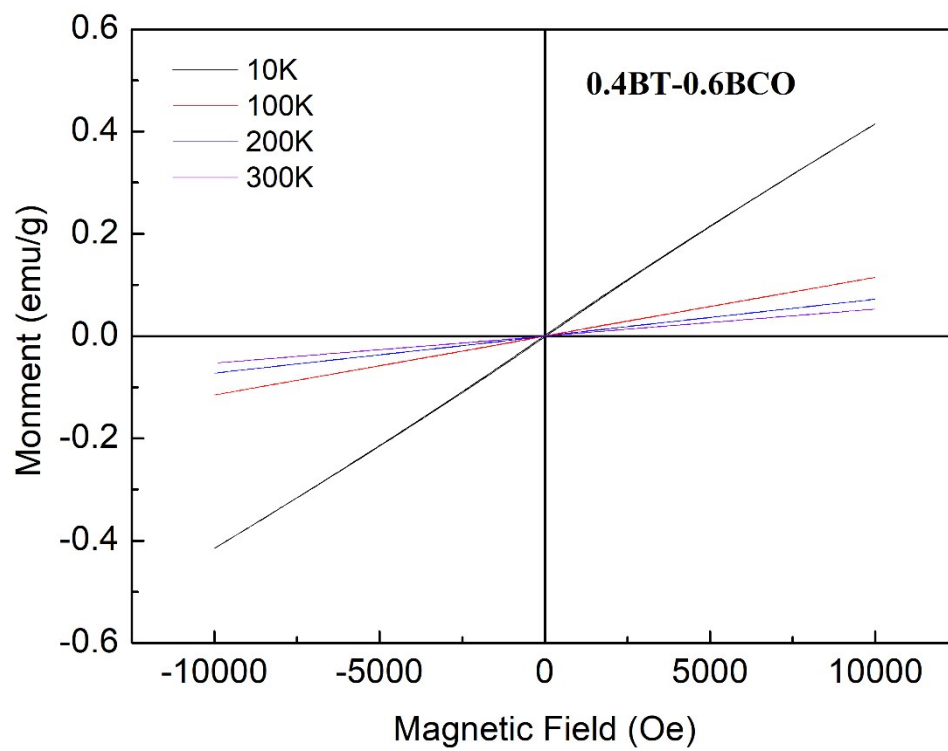


Figure S3. M-H loops taken at various temperatures for (a) 0.1BT-0.9BCO (b) 0.2BT-0.8BCO (c) 0.4BT-0.6BCO

4.

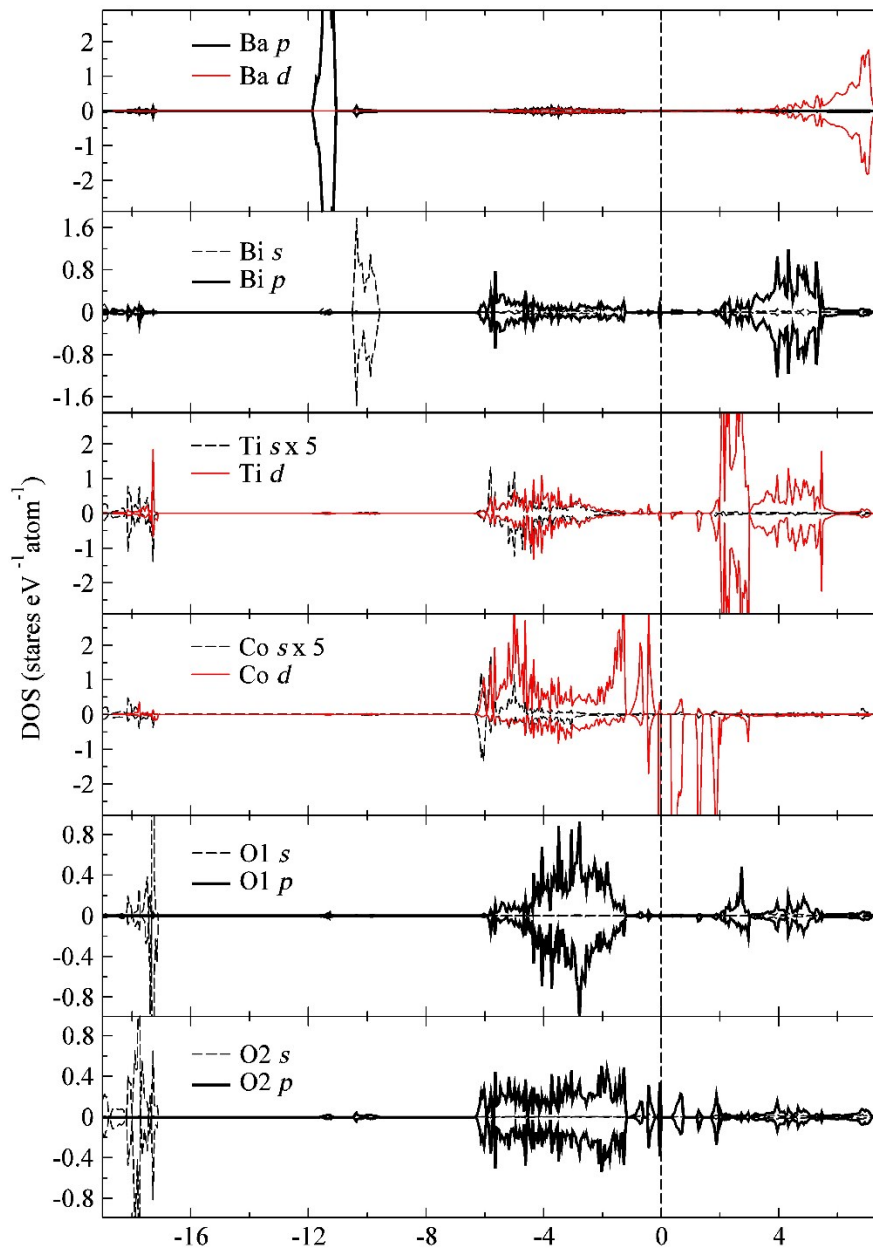


Figure S4. Site and angular-momentum projected DOS for 0.33BT-0.67BCO for *G*-AFM configuration obtained from GGA calculations ($U = 0$ eV)

5.

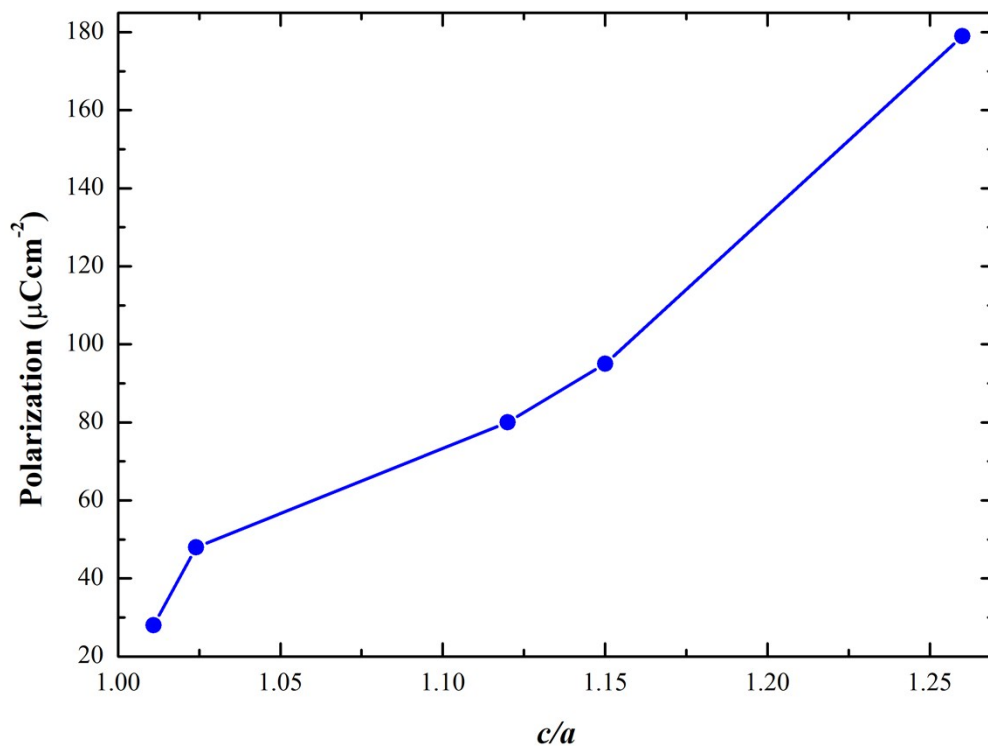


Figure S4. Calculated polarization vs tetragonality for ferroelectric $x\text{BaTiO}_3$ -(1- x) BiCoO_3 solid solution

Table S1. Optimized atomic positions for 0.33BT-0.67BCOBCO

atom	site	x	y	z
Bi/Ba	1a	0	0	0
Co/Ti	1b	0.5	0.5	0.5666(9)
O1	1b	0.5	0.5	0.2072(8)
O2	2c	0.5	0	0.7222(8)