

# Supporting Information

## Electric-field Induced Reversible Switching

### of the Magnetic Easy-axis in Co/BiFeO<sub>3</sub> on SrTiO<sub>3</sub>

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## TEM Results

Figure S1 shows the cross-sectional TEM of Pd (5 nm)/Co (5 nm)/BFO (80 nm) films on SRO layer with STO (001) substrate. It is clearly seen that the BFO film is epitaxially grown on SRO layer and the Pd and Co layer are both polycrystalline. The interface between the Co and BFO layers is sharp and clear.

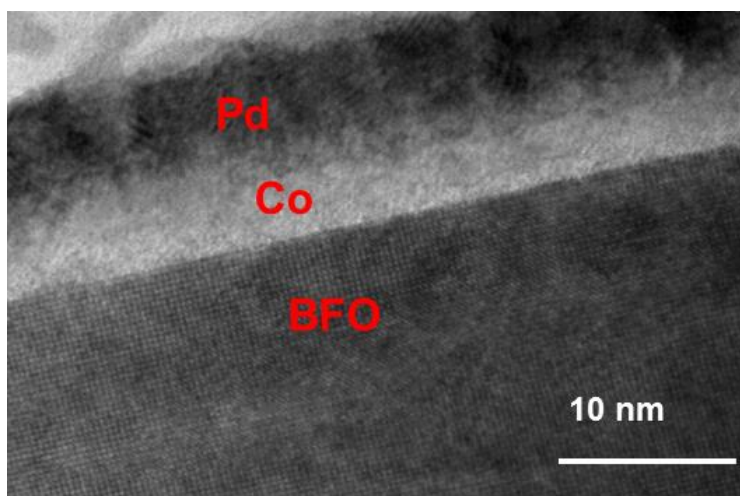


Figure S1 Cross-sectional TEM image of Pd/Co/BFO layers

## Neutron Diffraction

In the polarized neutron diffraction measurements, a vertically focused Heusler (He) (111) monochromator and a large flat He (111) analyzer with  $E_f = 13.7$  meV were used. Collimations were set to [none,  $1.33^\circ$ ,  $.855^\circ$ ,  $2.4^\circ$ ]. Two pyrolytic graphite (PG) filters on the scattered side

were used to remove higher order contamination from the measurements. A five coil assembly at the sample position allowed for the neutron spin orientations perpendicular to the scattering plane Q (vertical field, VF), and parallel to Q (horizontal field, HF) and at other angles with respect to Q in the scattering plane, where Q is the position in reciprocal space. A Mezei flipper in the incident beam was used to measure both spin-flip (SF) and non-spin-flip (NSF) scattering. Non-polarized measurements in different scattering planes were performed using the E3 spectrometer at Chalk River Laboratories. A Ge (113) monochromator was used to set a wavelength of 2.37051 Å. The measurements were performed in the diffraction mode (no analyzer). Collimations were set to [none, .29°, .39°, none].

Table I: Polarized neutron diffraction measurements of two reflections compared to a model. The direction of the neutron polarization are given by  $P_x$ ,  $P_y$ , and  $P_z$ . NSF and SF denote non spin flip and spin flip cross sections. The integrated intensities (I) are given in arbitrary units. Error bars represent one standard deviation.  $I_{err}$  and  $I_{calc}$  denote intensity error and calculated intensity, respectively.

H	K	L	$P_x$	$P_y$	$P_z$	NSF			SF		
						I	$I_{err}$	$I_{calc}$	I	$I_{err}$	$I_{calc}$
0.5	0.5	0.5	1	1	1	0.251	0.244	0	18.554	0.663	19.573
0.5	0.5	0.5	1	-1	0	10.915	0.510	9.786	7.651	0.421	9.786
0.5	0.5	0.5	1	1	-2	7.866	0.447	9.786	10.133	0.480	9.786
-0.5	-0.5	0.5	-1	-1	1	0.132	0.341	0	14.761	0.847	11.073
-0.5	-0.5	0.5	1	-1	0	16.149	0.841	9.786	1.274	0.308	1.286
-0.5	-0.5	0.5	1	1	2	0.789	0.367	1.286	13.663	0.791	9.786