Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information：

Tailoring perpendicular magnetic anisotropy with graphane oxide membranes

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M-H loops for CoFeB/$MgAlO_x$ stacks with and without GO membranes after annealing:

Figure S1 shows some samples with annealing temperature at 300 °C. It is obviously that the PMA were enhanced strongly for both samples with/without GO membranes. For the samples with t_{CoFeB} = 0.8 to 1.4 nm, the hysteresis loops with increased SQ for both samples with/without GO membranes. It is obvious that samples with t_{CoFeB} = 1.4 nm without GO membranes and the samples with t_{CoFeB} = 1.6 nm with GO membranes, the easy axis turns from in-plane to out-of-plane after annealing. Also, the in-plane saturation field increases for t_{CoFeB} = 0.8 to 1.4 nm the samples with GO compared to the samples without GO. While for samples with t=1.6 nm with GO, the easy axis turns from in-plane to out-of-plane. These results indicate that the GO membranes can significantly improve the PMA of CoFeB thin film.

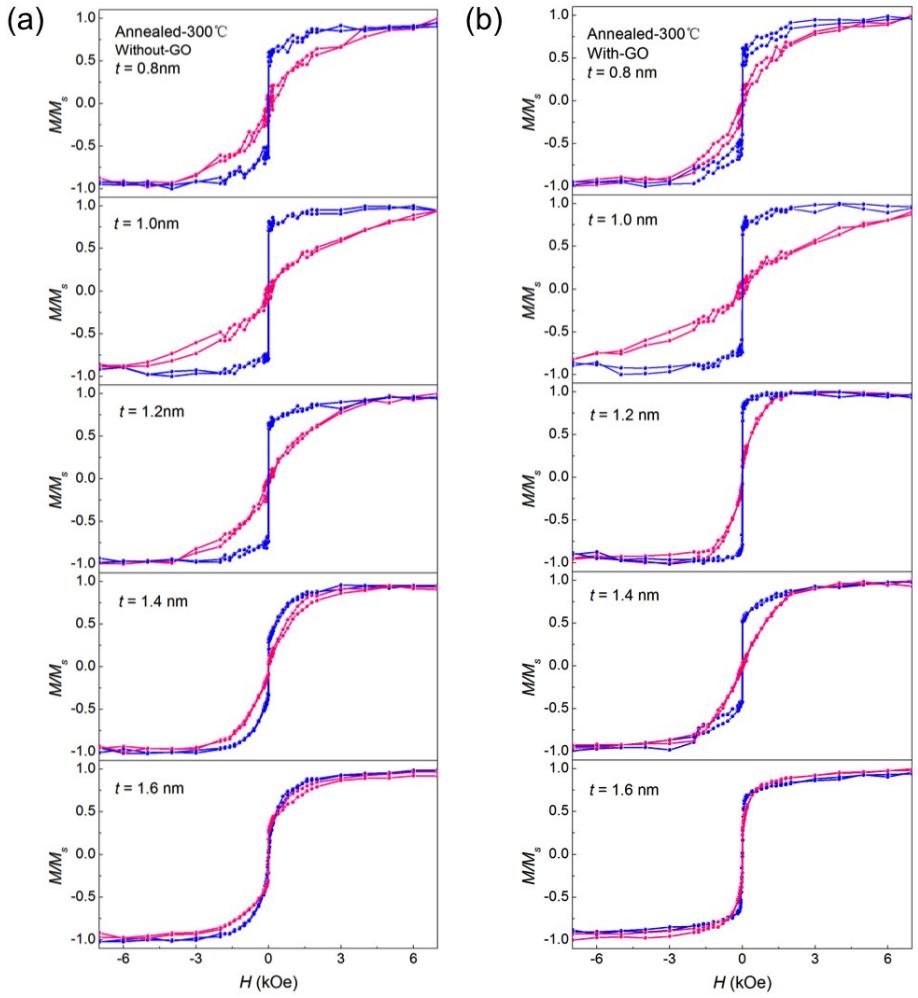

Figure S1. In-plane (red line with solid circles) and out-of-plane (blue line with solid circles) magnetization curves for samples after annealing at 300 °C with (a) and without (b) GO membranes with the thickness of CoFeB layer of t_{CoFeB} =0.8, 1.0, 1.2, 1.4, and 1.6 nm, respectively.