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Supporting Information

Oxygen-Deficient Dopant-Free Ti_3O_5 and Ti_2O_3 Ferromagnetic Nanostructures for Spin-Based Electronic Devices

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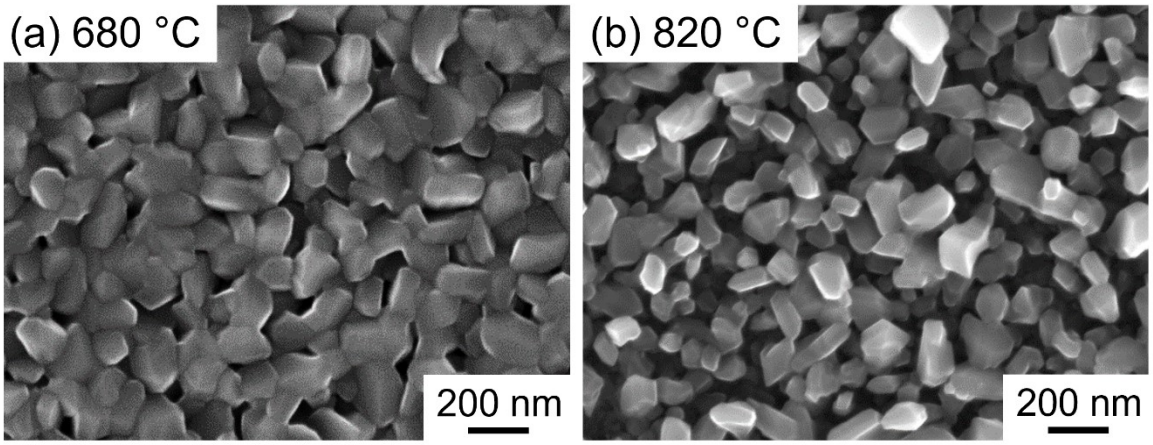

Figure S1. SEM images of titanium suboxide nanobricks grown on H-Si templates in 0.200 Torr Ar at (a) 680 °C and (b) 820 °C.

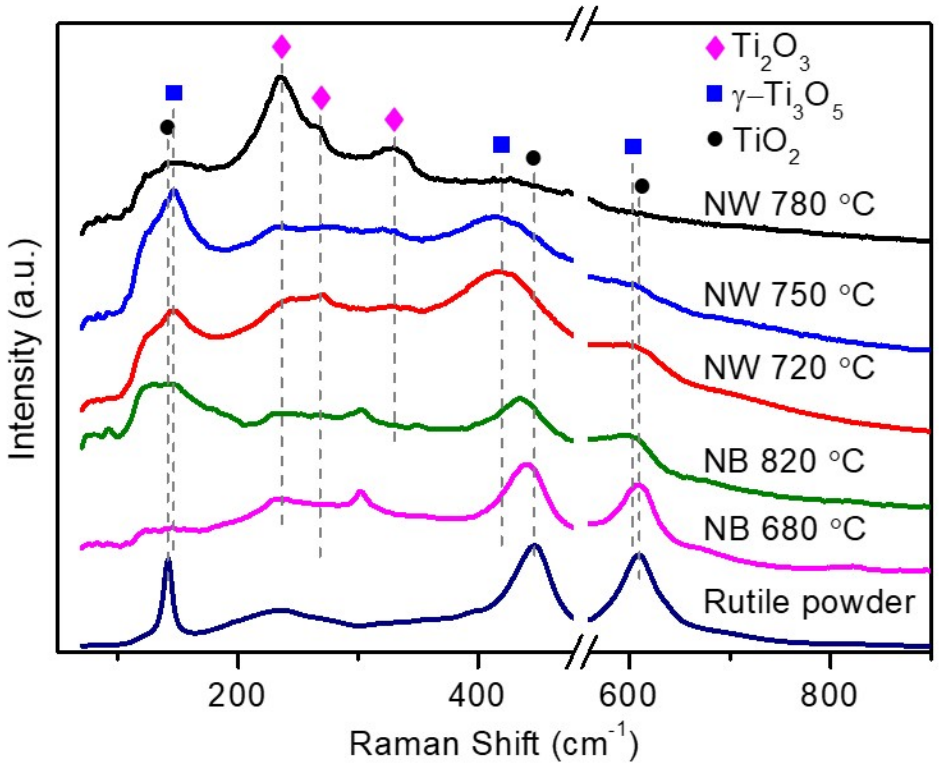

Figure S2: Raman spectra of as-deposited titanium suboxide nanostructures obtained at different temperatures and of commercial TiO_2 rutile powder.

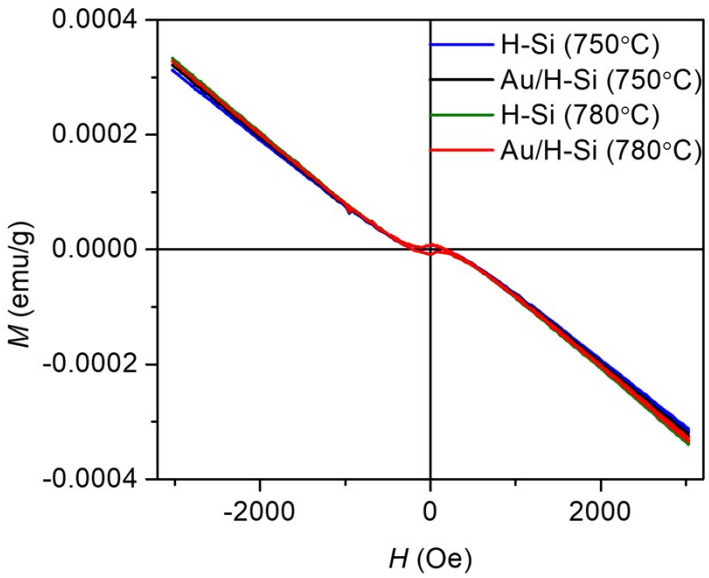

Figure S3: *M–H* curves of the H-Si and Au/H-Si substrates at 750 °C and 780 °C.

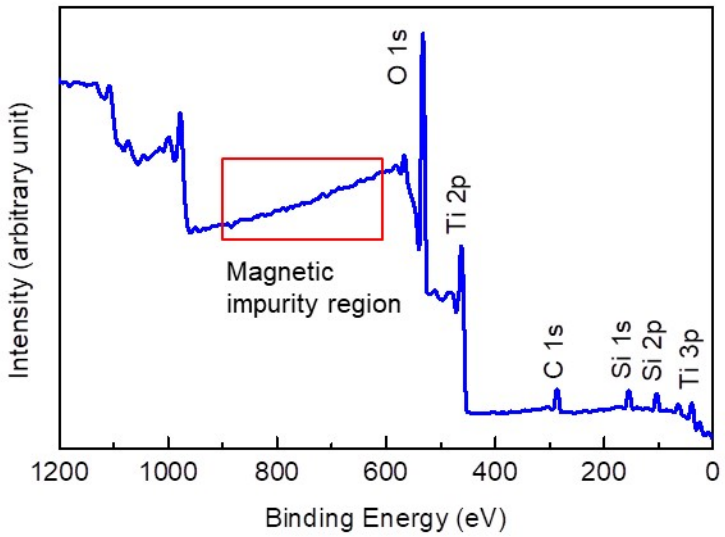

Figure S4: Typical XPS survey spectrum for the NW 750 °C nanowall film. Similar survey spectra have also been observed for the other nanostructured films (not shown).

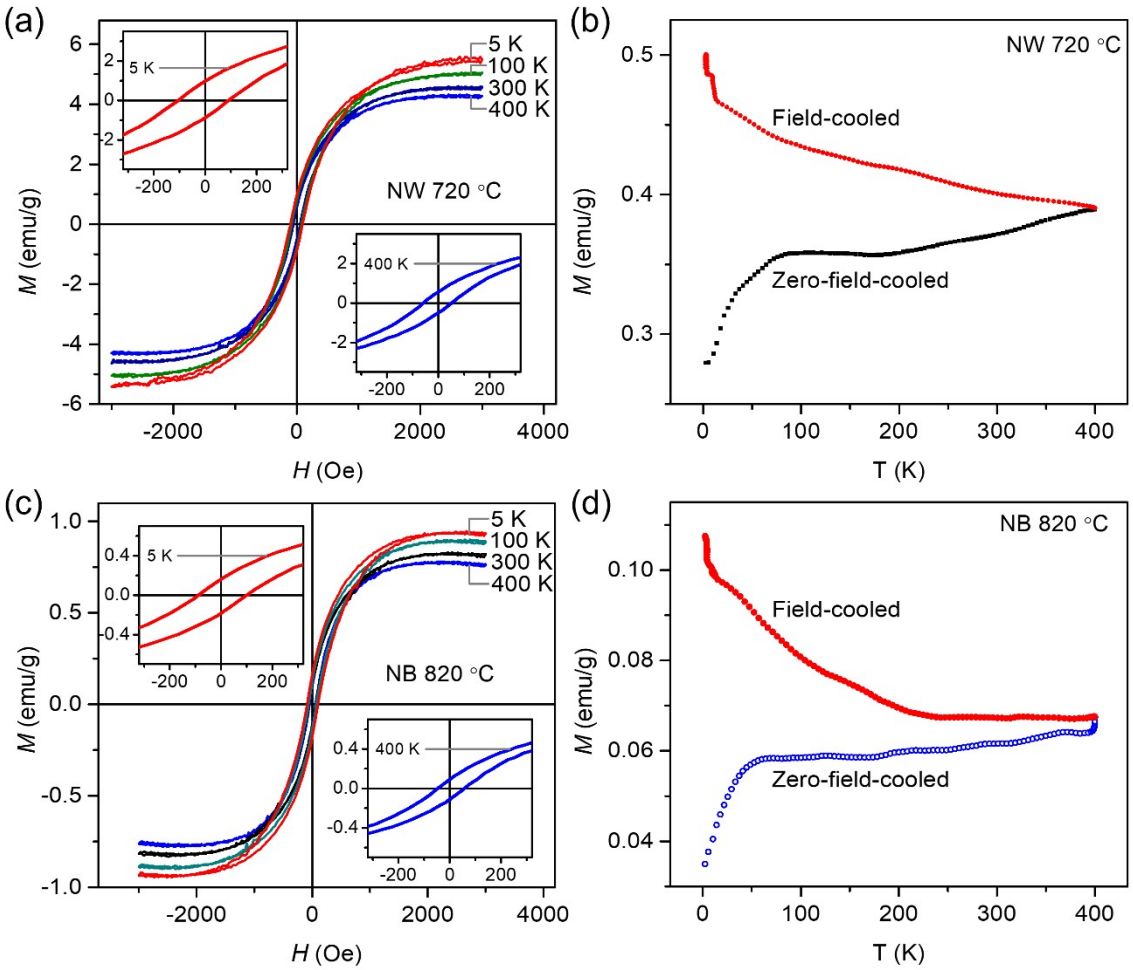

Figure S5: *M*–*H* curves of (a) the NW 720 °C and (c) NB 820 °C samples measured at 5, 100, 300, and 400 K. The insets show the magnified hysteresis loops near the origin at 5 and 400 K. Magnetization as a function of temperature for (b) the NW 720 °C and (d) NB 820 °C films following field-cooled and zero-field-cooled measurements at $H = 100$ Oe.

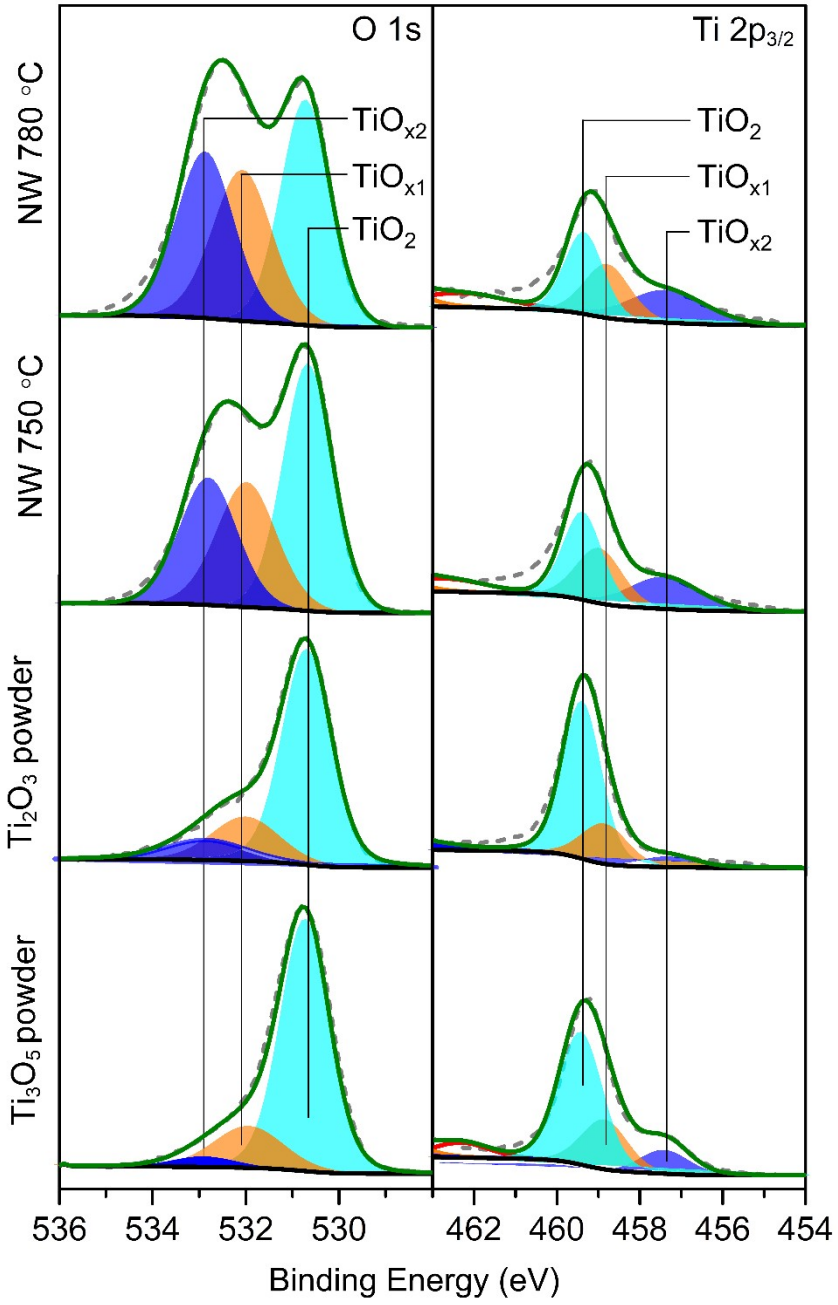

Figure S6: XPS spectra of the Ti $2p_{3/2}$ and O 1s regions of the corresponding NW 780 °C, NW 750 °C, and commercial Ti_3O_5 and Ti_2O_3 powders.

Table 2: Comparison of room-temperature saturation ferromagnetism in different dilute magnetic semiconductor systems.

System	**Saturation Magnetization (emu/g) at T = 300K**	**References**
NW system	7.93	This work
Oxygen-deficient ZrO_2 nanowires	5.9	[Ref. 1]
TiO_2 nanoribbons	0.2	[Ref. 2]
Fe and N co-doped TiO_2 nanorods	0.06	[Ref. 3]
Cr-doped TiO_2 nanorods	0.07	[Ref. 4]
Mn-doped ZnO thin-films	0.07	[Ref. 5]
ZnO nanowire (NW) arrays	0.41	[Ref. 6]
ZnO thin film	0.42	[Ref. 7]
TiO_2 films on Si substrates	~0.075	[Ref. 8]
TiO_2 rutile single crystals doped with transitional metal ions (TiO_2 – Ni)	0.86	[Ref. 9]
TiO_2:Co-doped polycrystalline pellets ($Ti_{0.95}Co_{0.05}O_2$:H)	2.35	[Ref. 10]
SnO_2 films on $LaAlO_3$ substrates	~1.75	[Ref. 11]
Sr_3SnO film	1.48	[Ref. 12]
CeO_{2-x} films	~1.34	[Ref. 13]
MgO films	~0.329	[Ref. 14]

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