

Supporting Information

**Synthesis and electrochemical performance of Nano-sized $\text{Li}_4\text{Ti}_5\text{O}_{12}$
with double surface modification of Ti(III) and carbon**

*Yonggang Wang, Haimei Liu, Kaixue Wang, Hosono Eiji, Yarong Wang, and
Haoshen Zhou**

*Energy Technology Research Institute, National Institute of Advanced Industrial
Science and Technology (AIST) Umezono, 1-1-1, Tsukuba, 305-8568 Japan*

* Corresponding author: (E-mail) hs.zhou@aist.go.jp

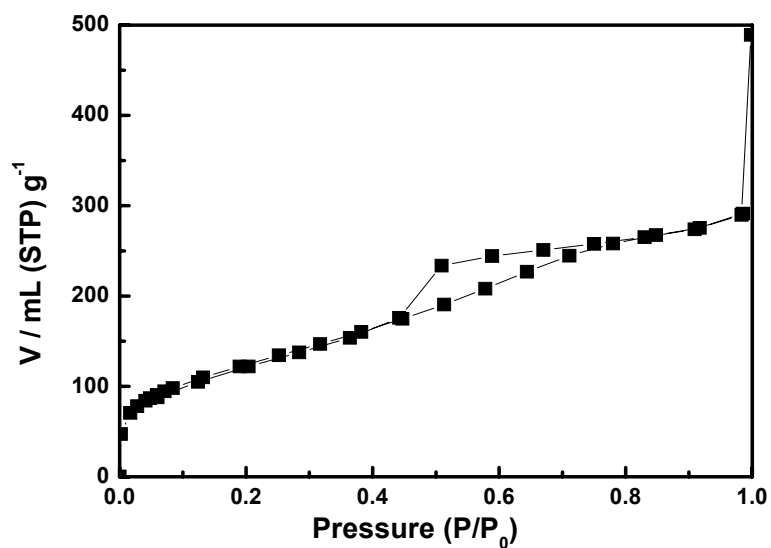


Figure S1 The N₂ adsorption-desorption isotherm of prepared TiO₂-PANI composite. As shown in Fig. S1, the prepared composite has a clear hysteresis loop within the relative pressure range of 0.4~0.8, indicating its typical mesoporous structure.

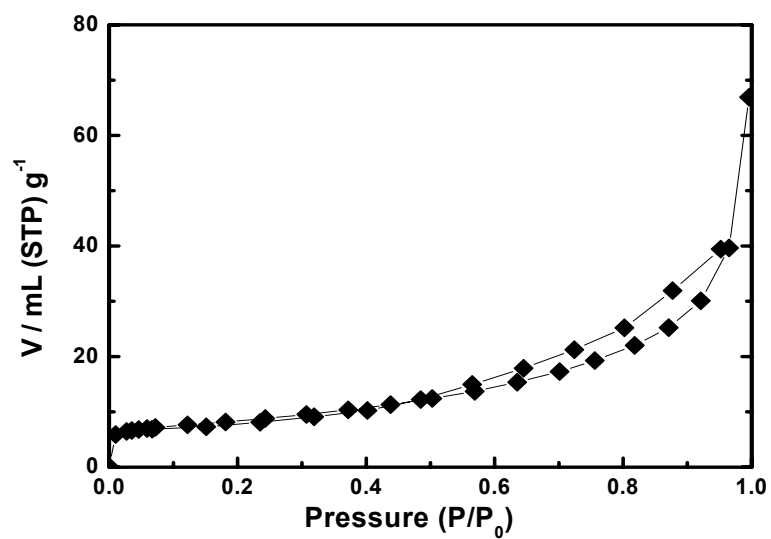


Figure S2 The N₂ adsorption-desorption isotherm of prepared Li₄Ti₅O₁₂-Carbon composite.

Table S1 Information obtained from XPS spectra (BE is binding energy).

		Li ₄ Ti ₅ O ₁₂		TiO ₂		Assignment
		BE (eV)	Atom Ratio (100%)	BE (eV)	Atom Ratio (100%)	
C 1s	01	284.6	13	284.6	7	C-C, C-H
	02	285.8	6	285.6	4	C-O
	03	287.3	3	287.2	3	C=O
	04	288.9	4	288.9	3	O-C=O
	05	290.6	6	-	-	CO ₃ ²⁻
O 1s	01	530.4	25	530.2	53	Metal-O
	02	532.3	11	531.6	6	O-C, O=C
Li 1s	01	55.4	22	-	-	<u>Li</u> ₄ Ti ₅ O ₁₂
Ti 2p	01	459.1	10 ^(a)	459.1	24 ^(b)	Li ₄ <u>Ti</u> ₅ O ₁₂ , <u>Ti</u> O ₂
	02	464.8		464.8		

a. the total Ti atom ration in Li₄Ti₅O₁₂ is 10%. b. the total Ti atom ration in TiO₂ is 24%.