Electronic Supplementary Material (ESI) for Dalton Transactions
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Supplementary data

Controlled Synthesis and Li-electroactivity of Rutile TiO_2 Nanostructure with Walnut-like Morphology

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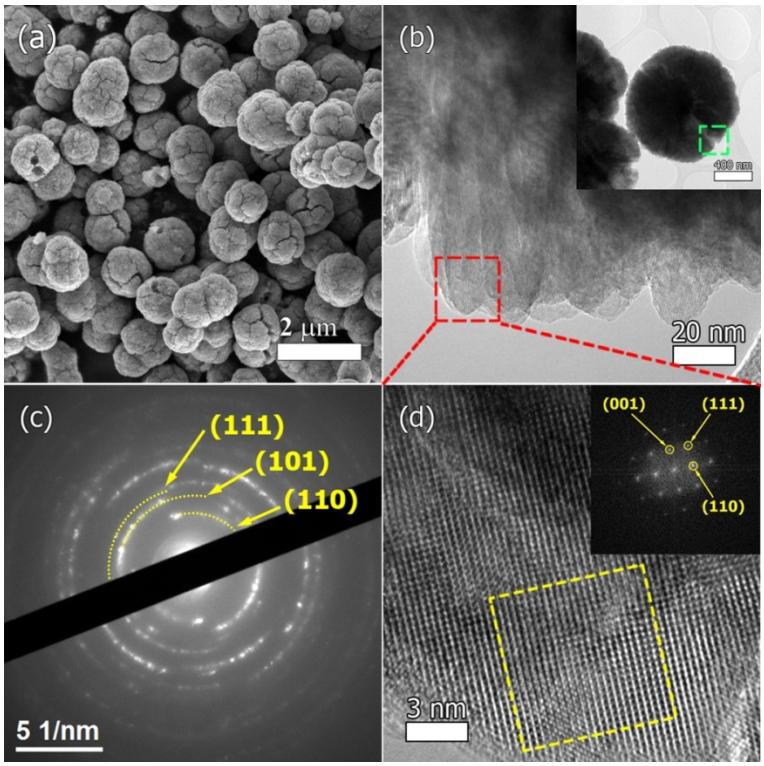

Fig. S1 (a) FESEM and (b) high-magnification TEM images of a W-TiO_2 calcined at 300 ^{o}C for 2 h, (c) SAED patterns of calcinated W-TiO_2, and (d) HRTEM image corresponding to the area of the red square shown in (b). The inset of (b) shows a single W-TiO_2 low-magnification TEM image and the inset of (d) shows the FFT pattern corresponding to the yellow square shown in (d)

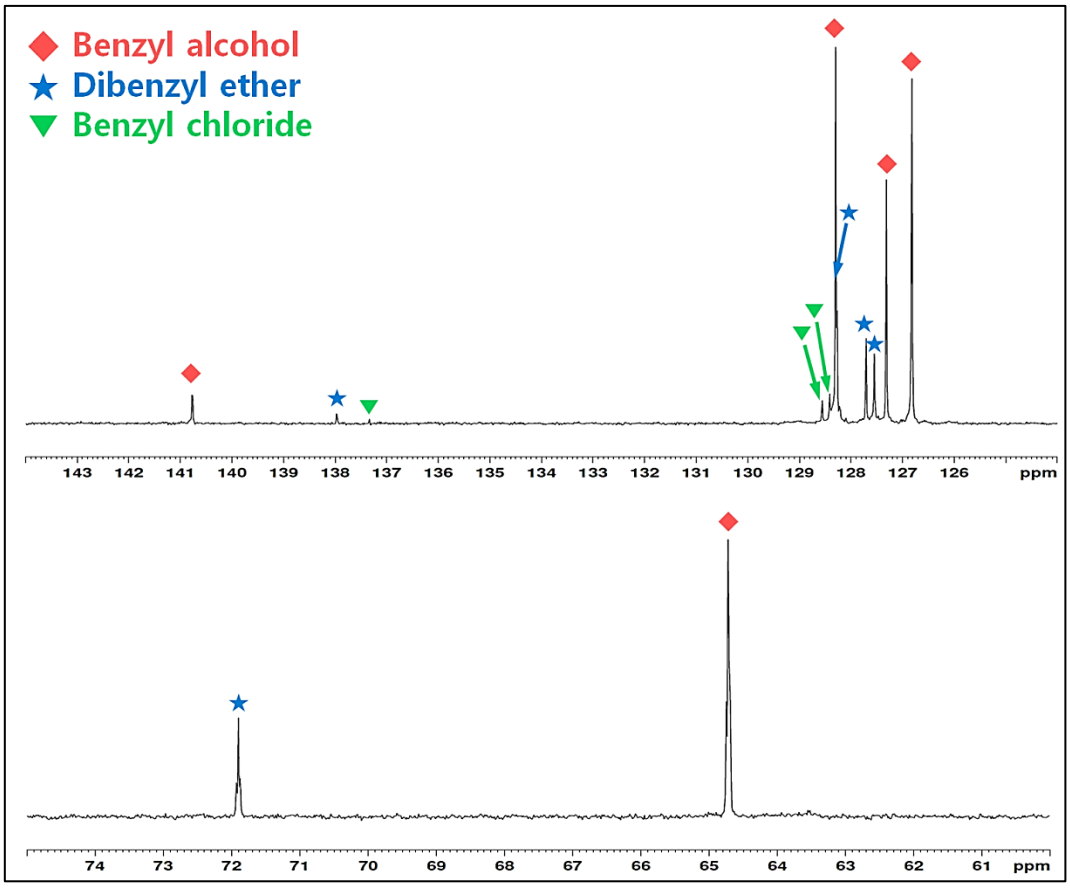

Fig. S2 ^{13}C-NMR spectra (500MHz, $CDCl_6$) of finished solvent that was obtained by separating from TiO_2 particles by centrifugation after W-TiO_2 synthesized at 120 ^{o}C with 1:4 Ti : HCl v/v ratio

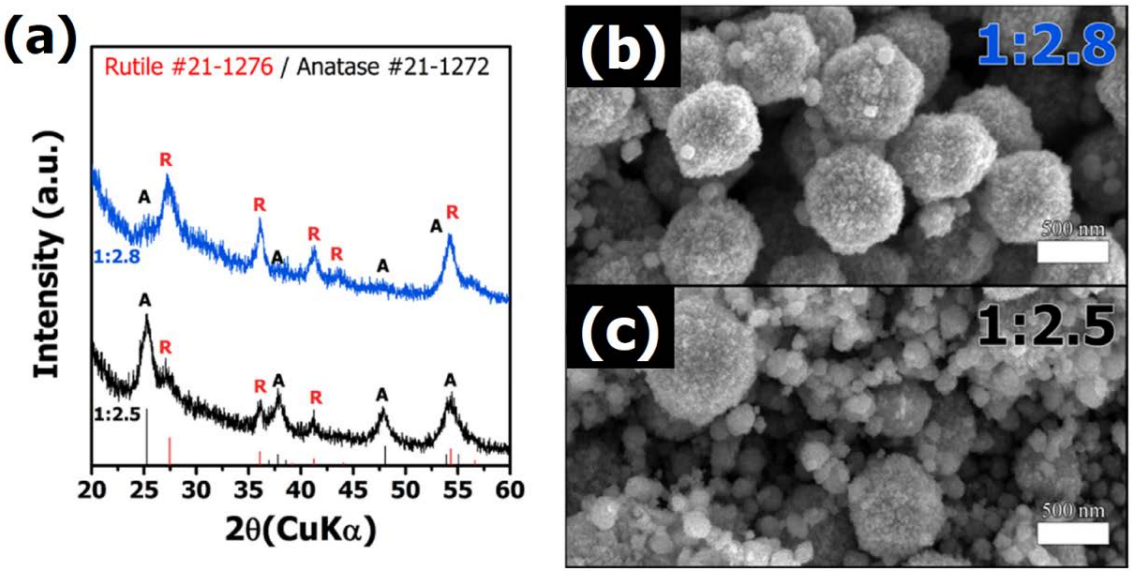

Fig. S3 XRD patterns of W-TiO_2 synthesized at 120 ^{o}C with various Ti: HCl v/v ratio: 1:2.8 and 1:2.5, and morphology of synthesized W-TiO_2: (b) 1:2.8 and (c) 1:2.5

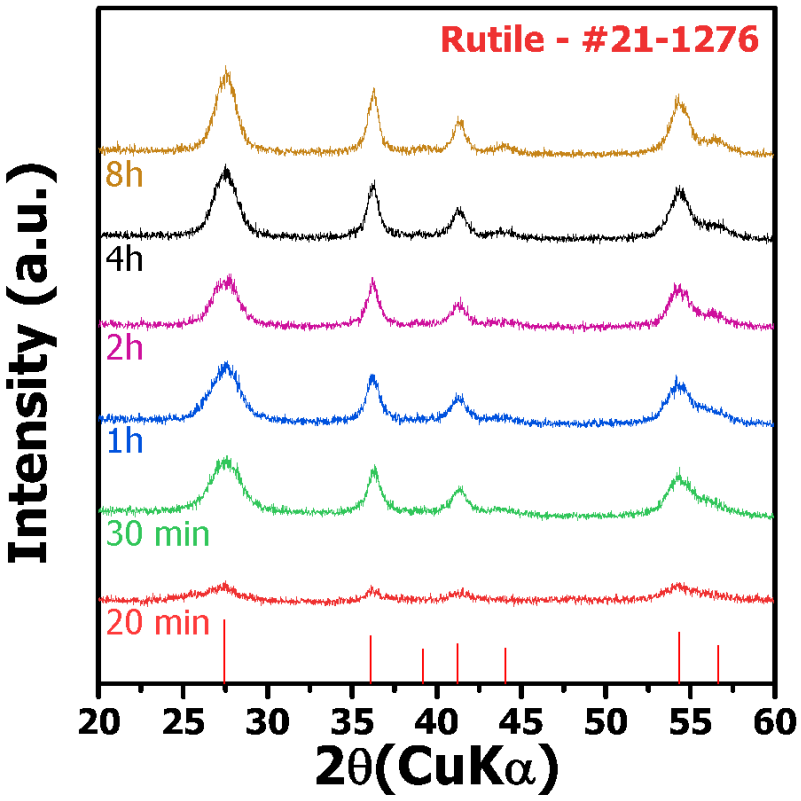

Fig. S4 XRD patterns of W-TiO_2 synthesized at 120 ^{o}C for various reaction time; from 20 min to 8h with 1: 4 $Ti(OBu)_4$: HCl v/v ratio

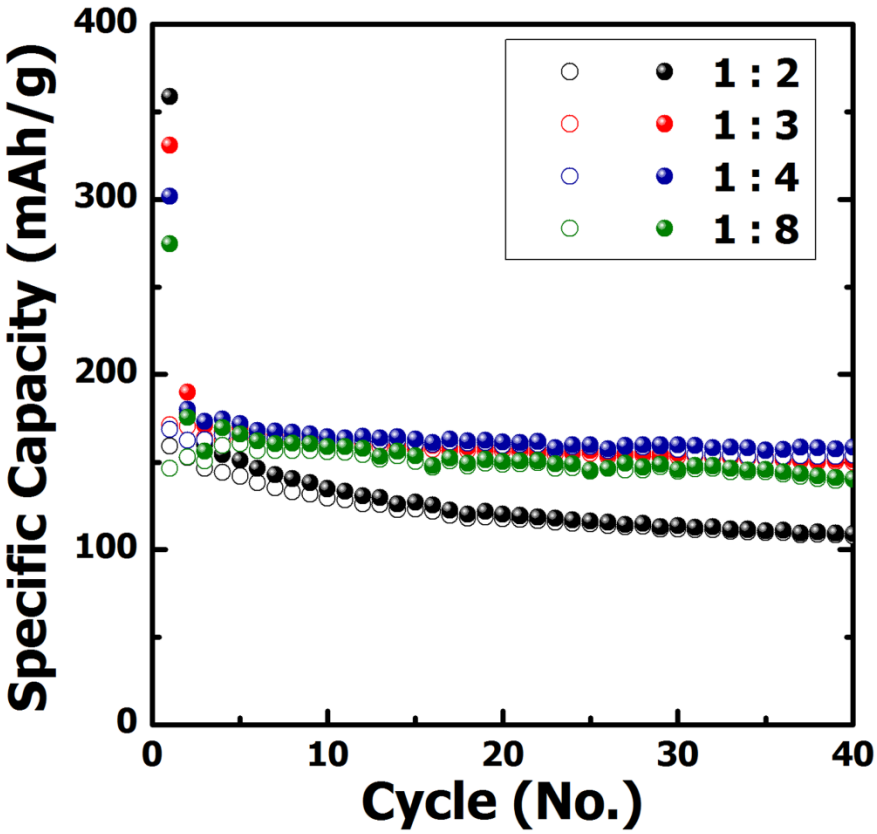

Fig. S5 Variation in the discharge-charge specific capacities for W-TiO_2 particles prepared with various Ti: HCl ratio: 1:2, 1:3, 1:4, and 1:8

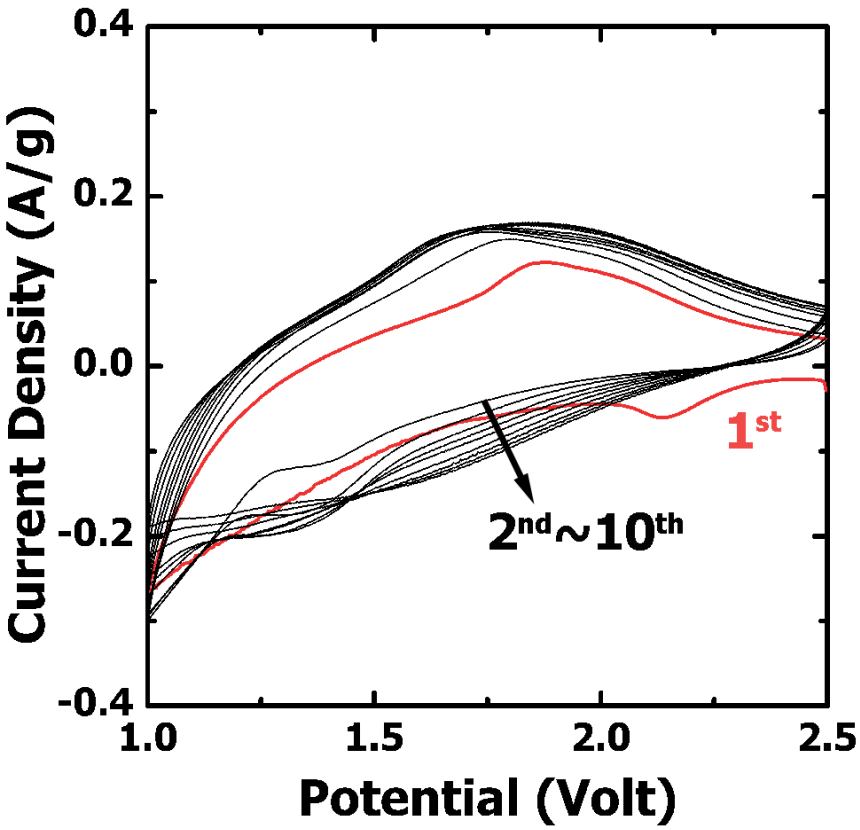

Fig. S6 Typical cyclic voltammetry of the rutile W-TiO_2 electrode at a scanning rate of 0.3 mV s^{-1}