Facile synthesis of Pt nanoparticles supported on anatase TiO_2 nanotubes with good photo-electrocatalysis performance for methanol

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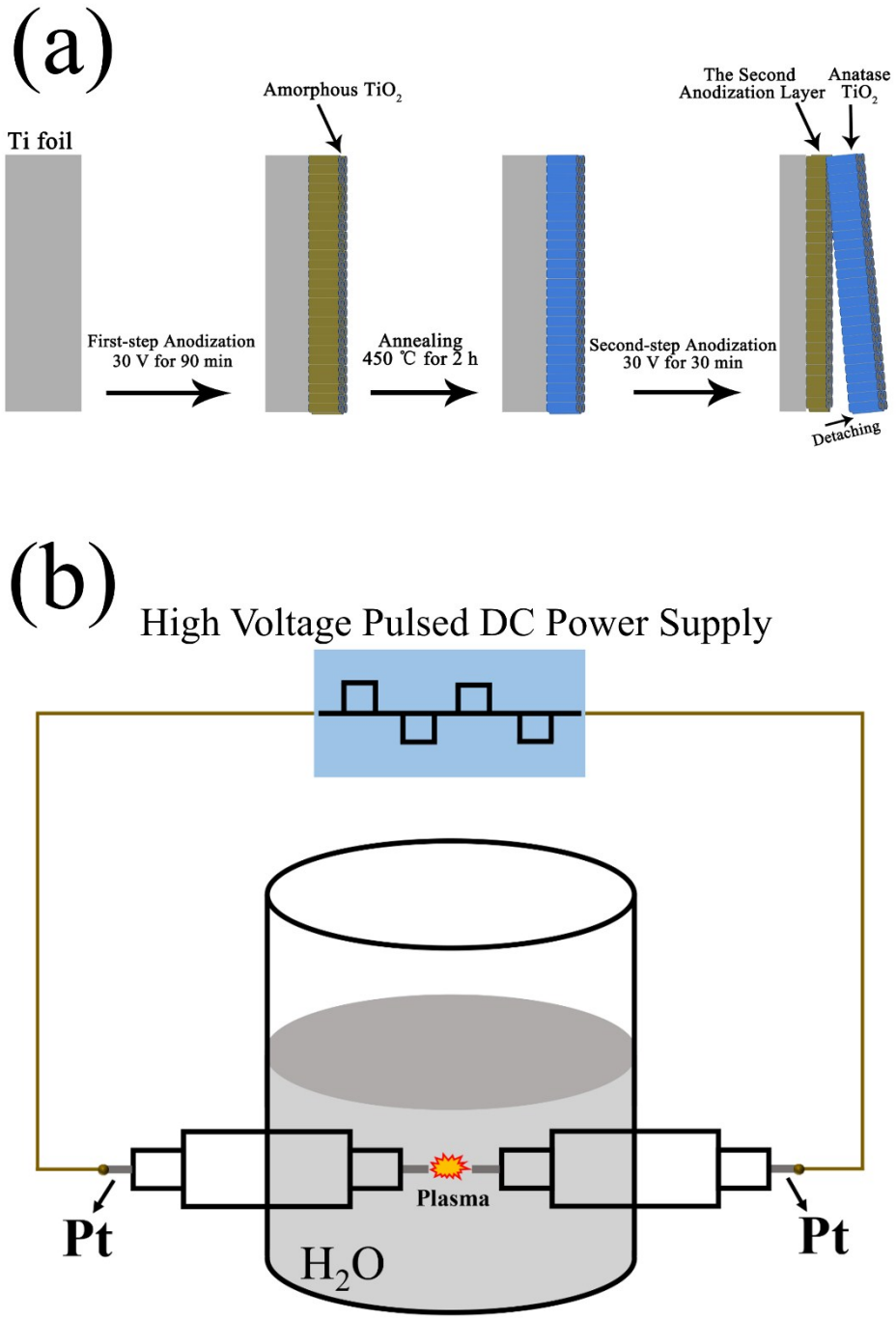

Fig. S1. Schematic illustration of two-step anodization method to prepare TiO_2 nanotubes (a); Schematic illustration of a solution plasma sputtering technique for the preparation of Pt nanoparticles (b).

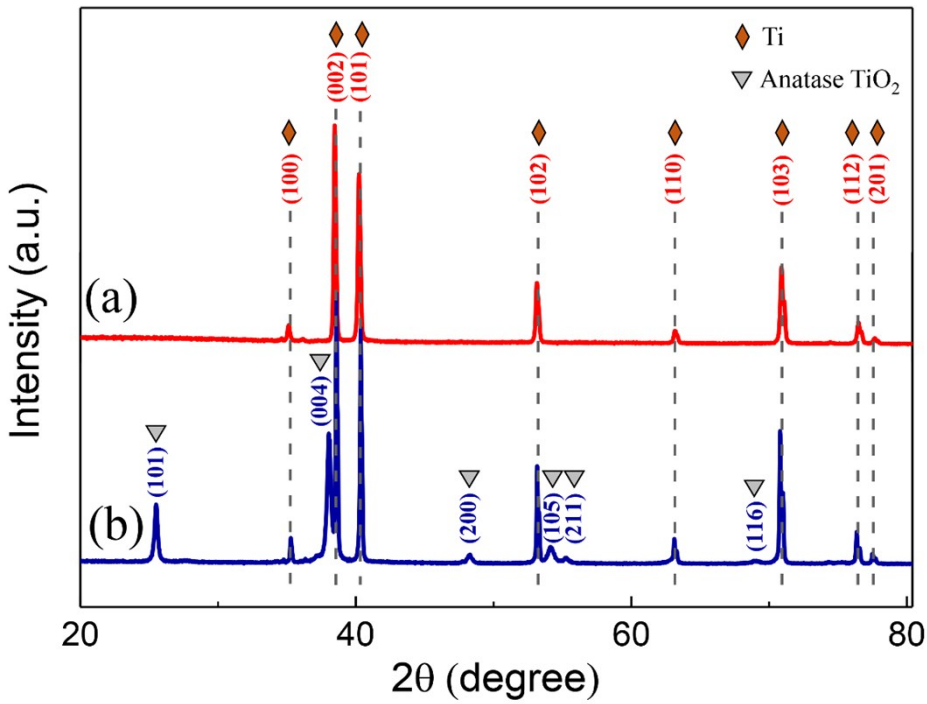

Fig. S2. XRD patterns of two Ti foil which directly obtained after first-step anodization (a) and obtained after annealing process (b).

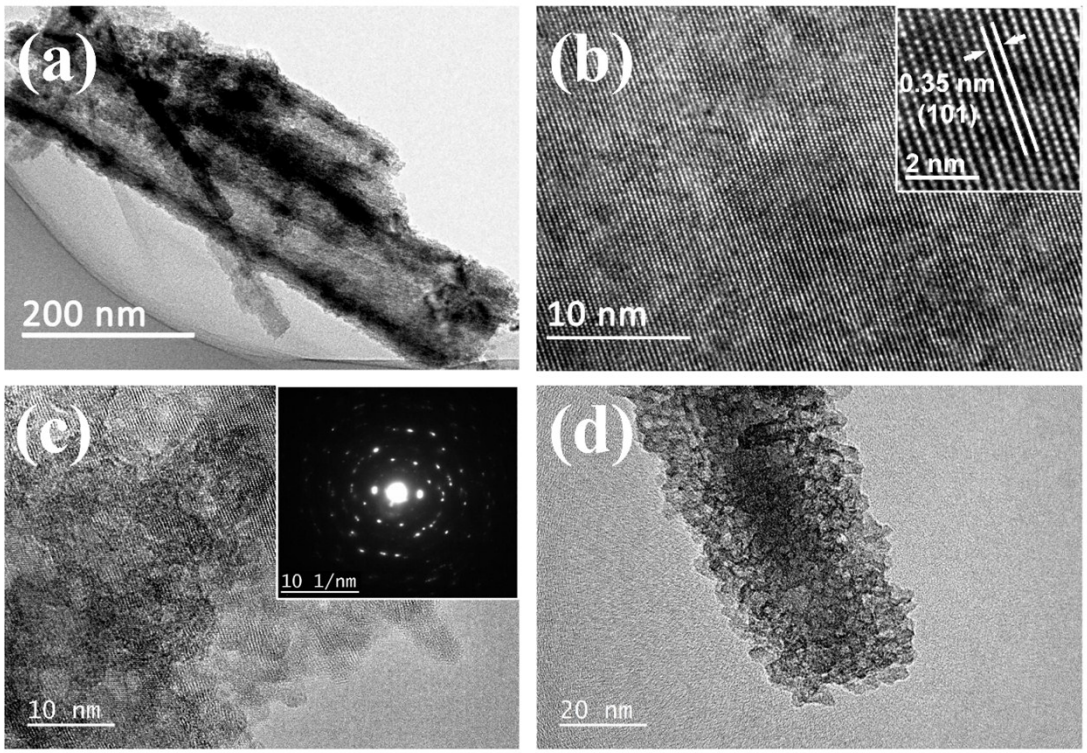

Fig. S3. (a) Typical TEM image of as-prepared TNTs. High-resolution TEM (HR-TEM) image of the TNTs inner part (b) and edge part (c). (d) TEM image of a broken tip of a TNT. The insets of (b) and (c) are the high magnification image and corresponding SAED analysis, respectively.

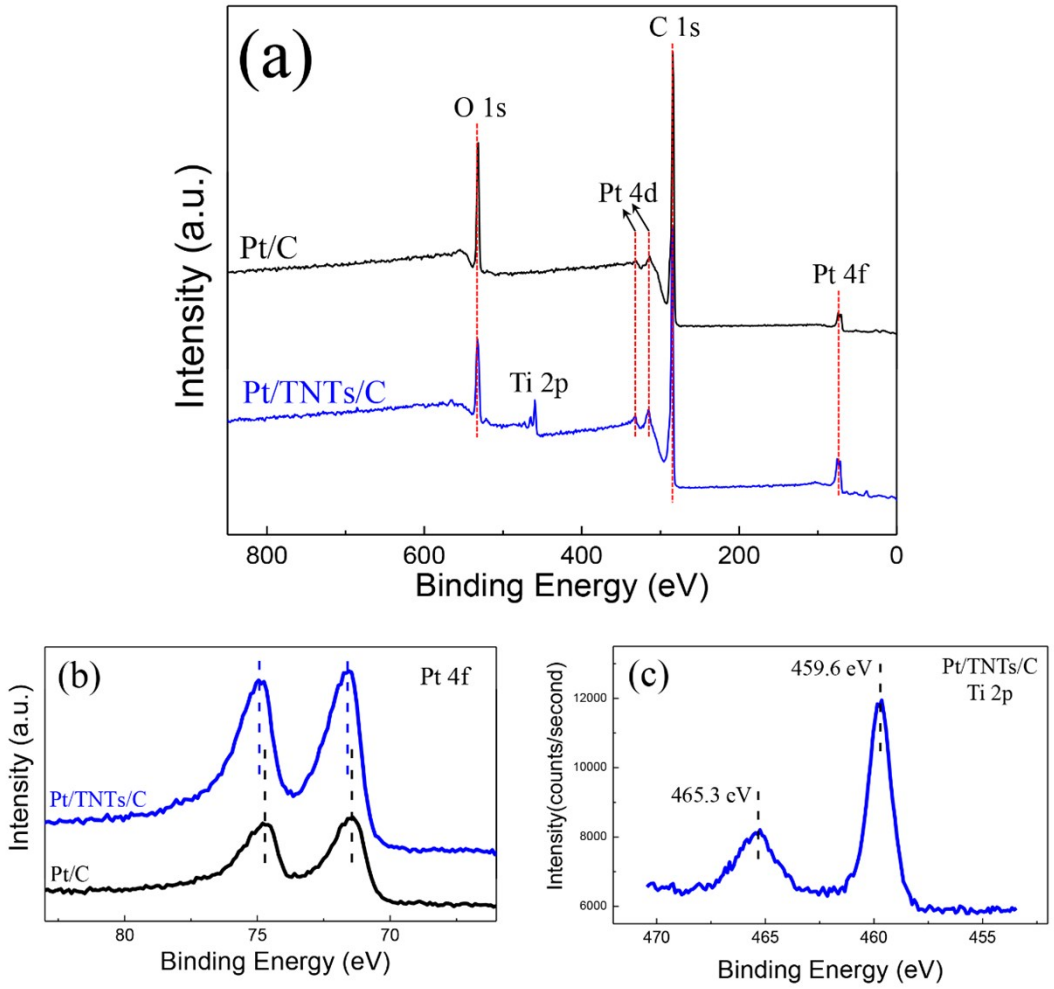

Fig. S4. (a) XPS spectra of the wide surveys for the Pt/C and Pt/TNTs/C composites; (b) Pt 4f for the Pt/C and Pt/TNTs/C; (c) Ti 2p for the Pt/TNTs/C.