Electronic Supplementary Material (ESI) for Journal of Materials Chemistry

Electronic Supporting Information

Non-equilibrium partial oxidation of TiN surface for efficient visible-light-driven hydrogen production

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This supporting information contains Figures S1-S6, and Table S1.

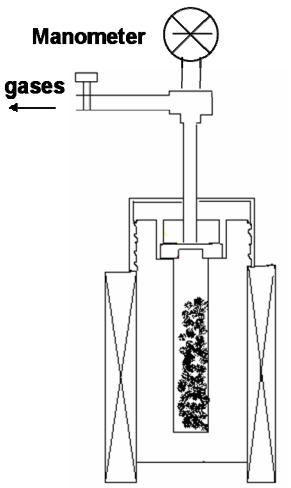

Figure S1. Schematic drawing of sealed stainless steal reactor for TiN non-equilibrium partial oxidation.

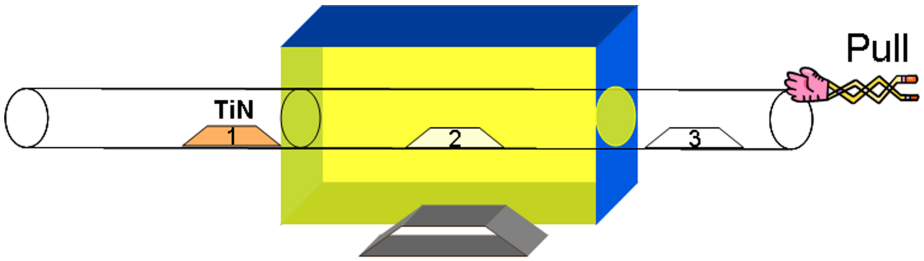

Figure S2. Schematic drawing of the flash oxidation of TiN particles. For detailed performance procedure, see experimental section.

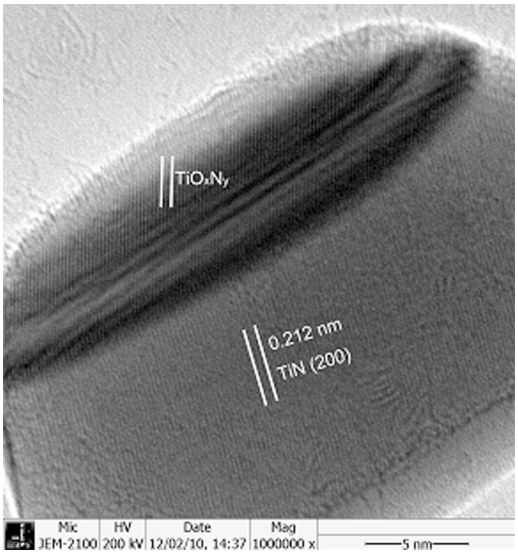

Figure S3. Typical HRTEM image of the TiO_xN_y@TiN particles at TNP-TiN.

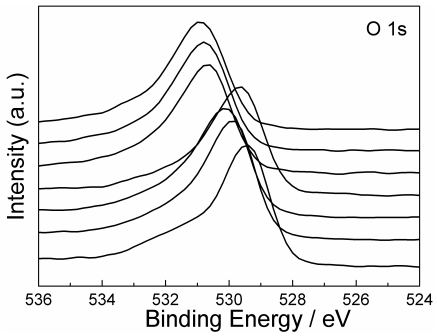

Figure S4. High-resolution O 1s XPS spectrum upon Ar^+ sputtering.

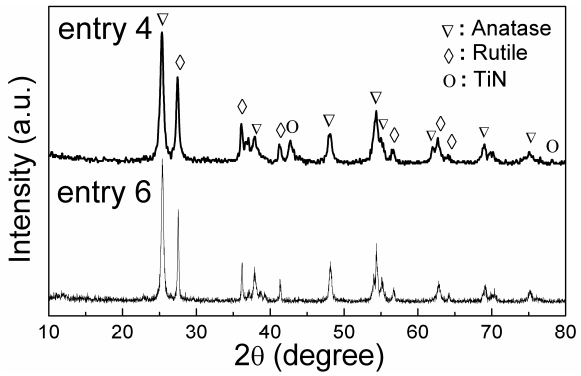

Figure S5. Typical XRD patterns of the samples obtained by flash oxidation of TiN, at entry 4 and entry 6 in table S1.

Table S1. Preparation parameters and H_2 evolution rate of the flash oxidation samples

Sample No.	Temp. (℃)	Reaction duration (s)	Oxidation degree[a]	Hydrogen Evolution ($\mu molg^{-1}h^{-1}$)
1	650	10	No reaction	0
2	750	8	TiO_xN_y, undetected; TiO_2, little	7
3	800	5	TiO_xN_y, undetected; TiO_2, little	9
4	800	8	TiO_xN_y, undetected; TiN, little; TiO_2, dominant	14
5	800	15	TiO_xN_y, undetected; TiN, little; TiO_2, dominant	5
6	800	60	Completely converted to TiO_2	0

a: the data obtained from XRD observation.