

Formation of a Nanorod-Assembled TiO₂ Actinomorphic-Flower-like Microsphere Film via Ta Doping Using a Facile Solution Immersion Method for Humidity Sensing

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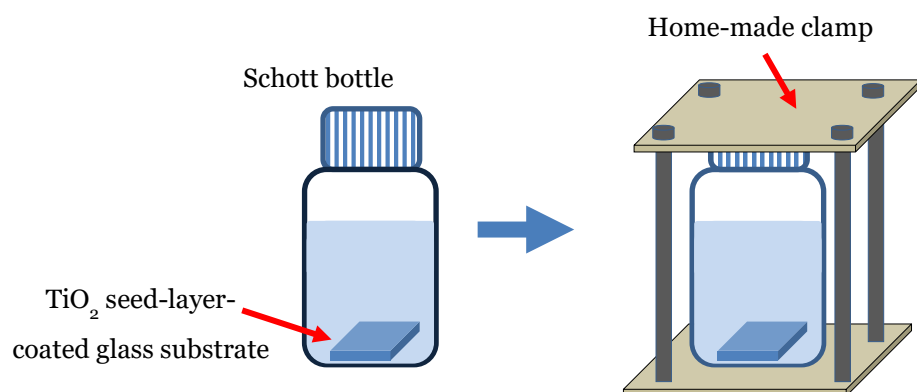


Figure S1. Sample preparation setup for TiO₂ solution immersion method.

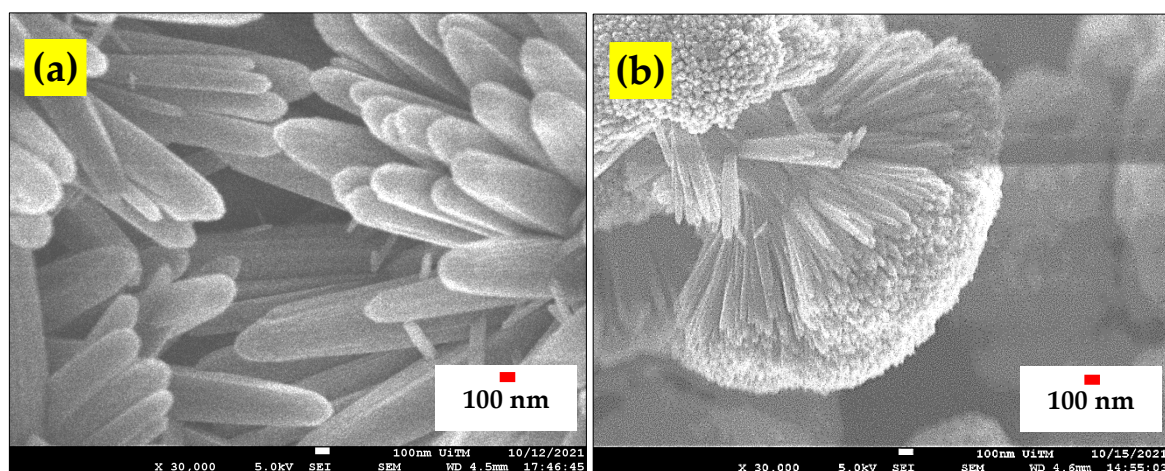


Figure S2. FESEM image of: (a) UTD and (b) TAFM-3 at 30,000 \times magnification.

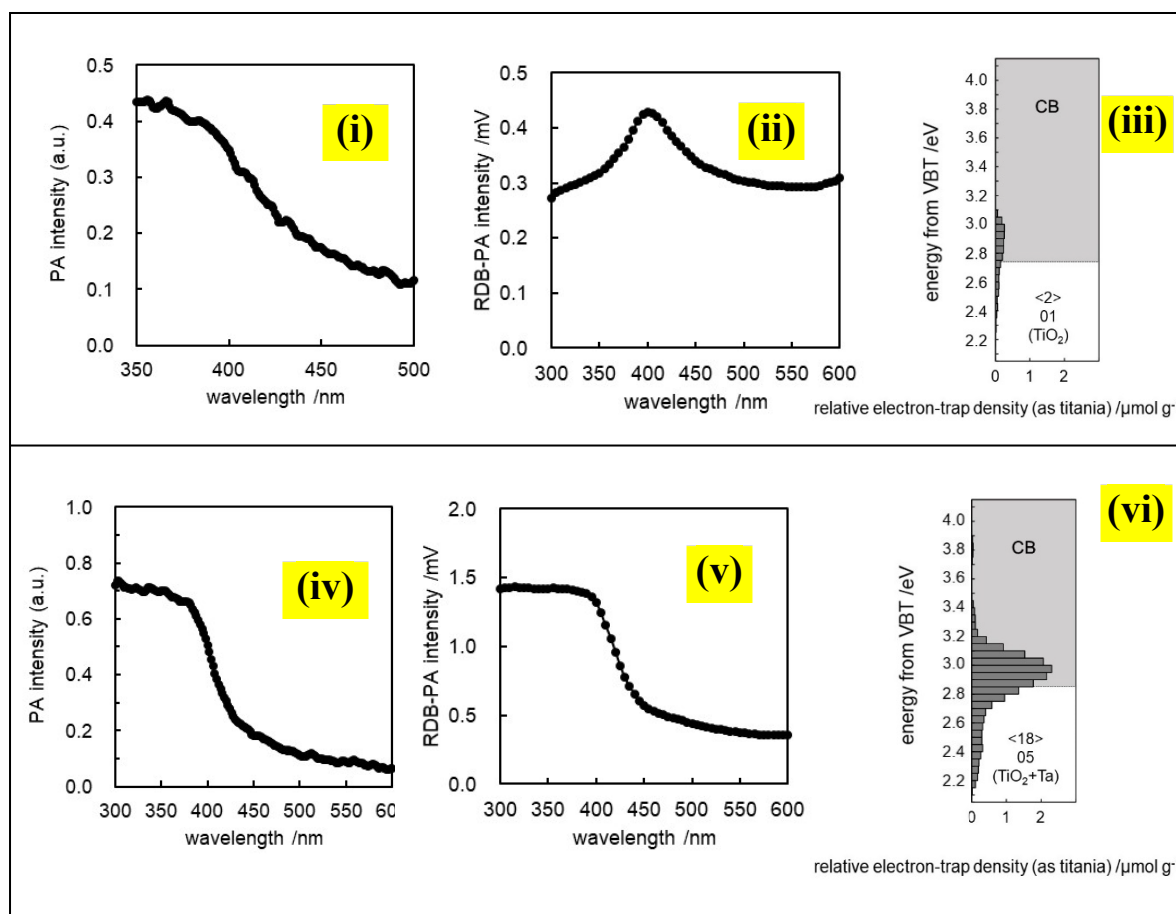


Figure S3. RDB-PAS measurement results of: (i-iii) UTD and (iv-vi) TAFM-3.

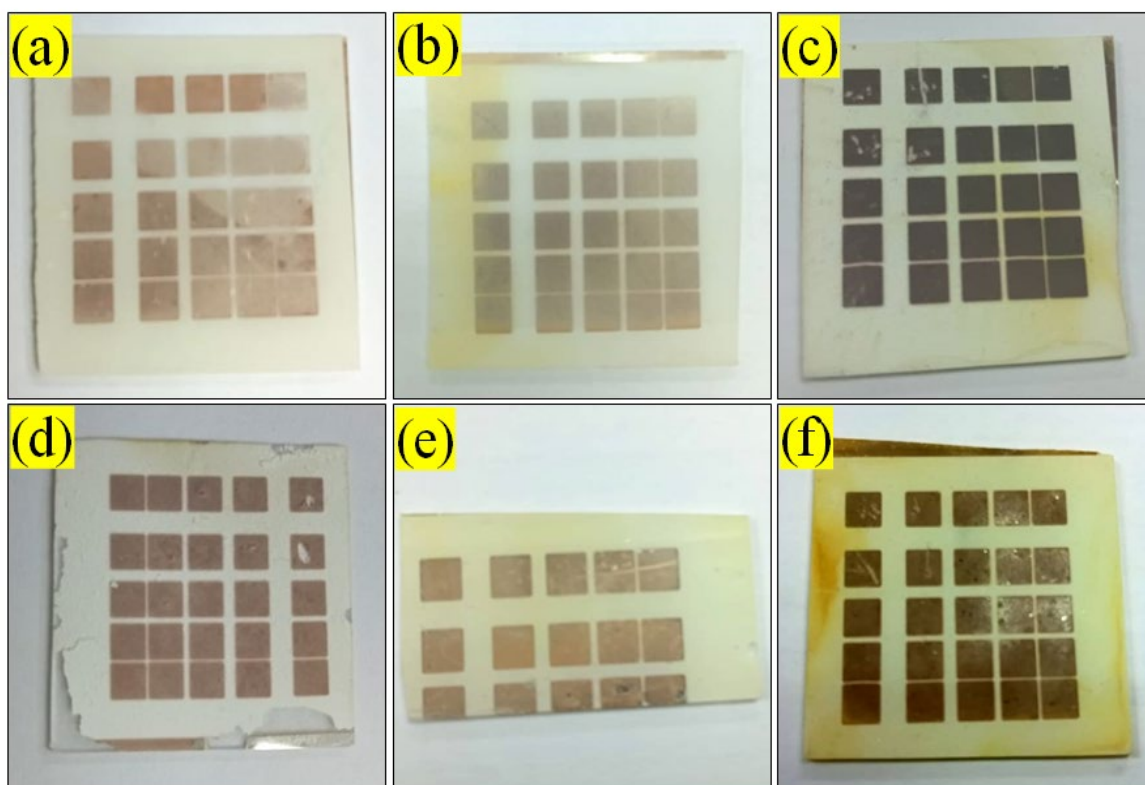
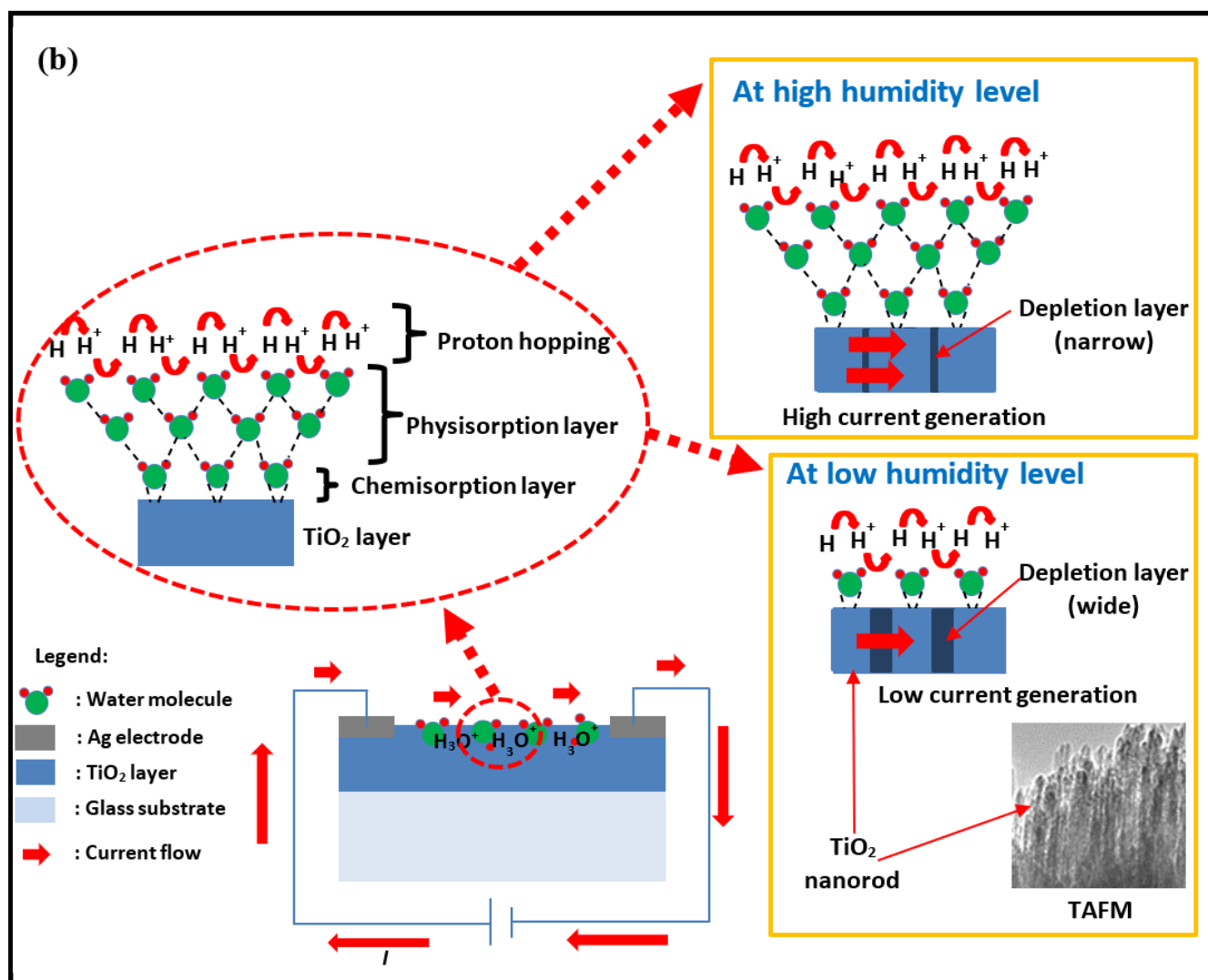
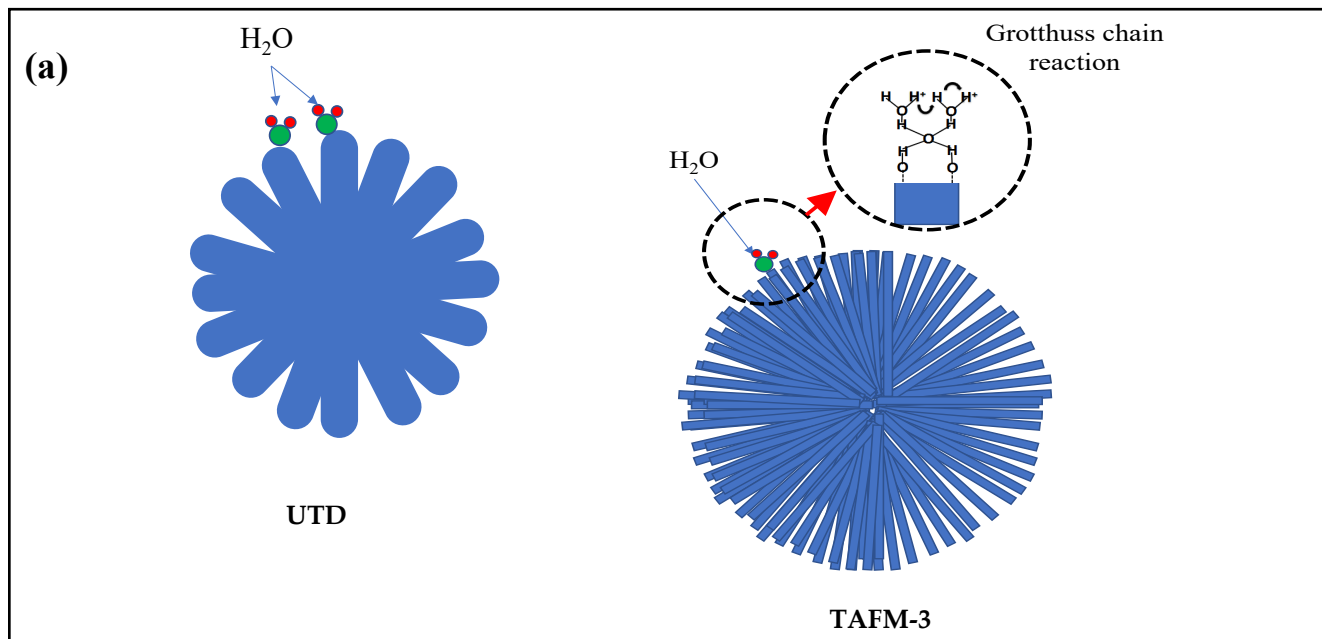
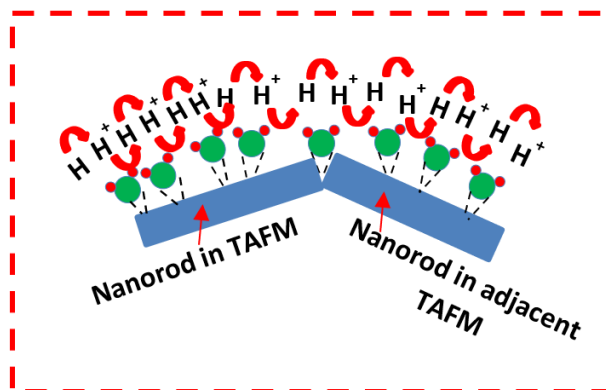
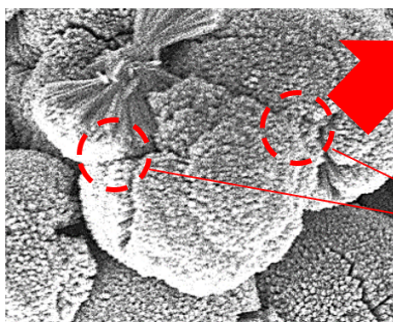


Figure S4. Photo image of humidity sensor made of: (a) UTD, (b) TAFM-1, (c) TAFM-3, (d) TAFM-5, (e) TAFM-7, and (f) TAFM-9.



(c)



Interconnected TAFMs formed TAFM's network for current flow across the film through the proton hopping mechanism

Figure S5. (a) Humidity detection mechanism of UTD and TAFM-3. (b) Current flow of humidity sensor induced by ionic conduction under humid condition. (c) Proton hopping mechanism between the nanorod in the TAFM and the nanorod in the adjacent TAFM.