



Supporting Information

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Spaced TiO₂ Nanotubes Enable Optimized Pt Atomic Layer Deposition for Efficient Photocatalytic H₂ Generation

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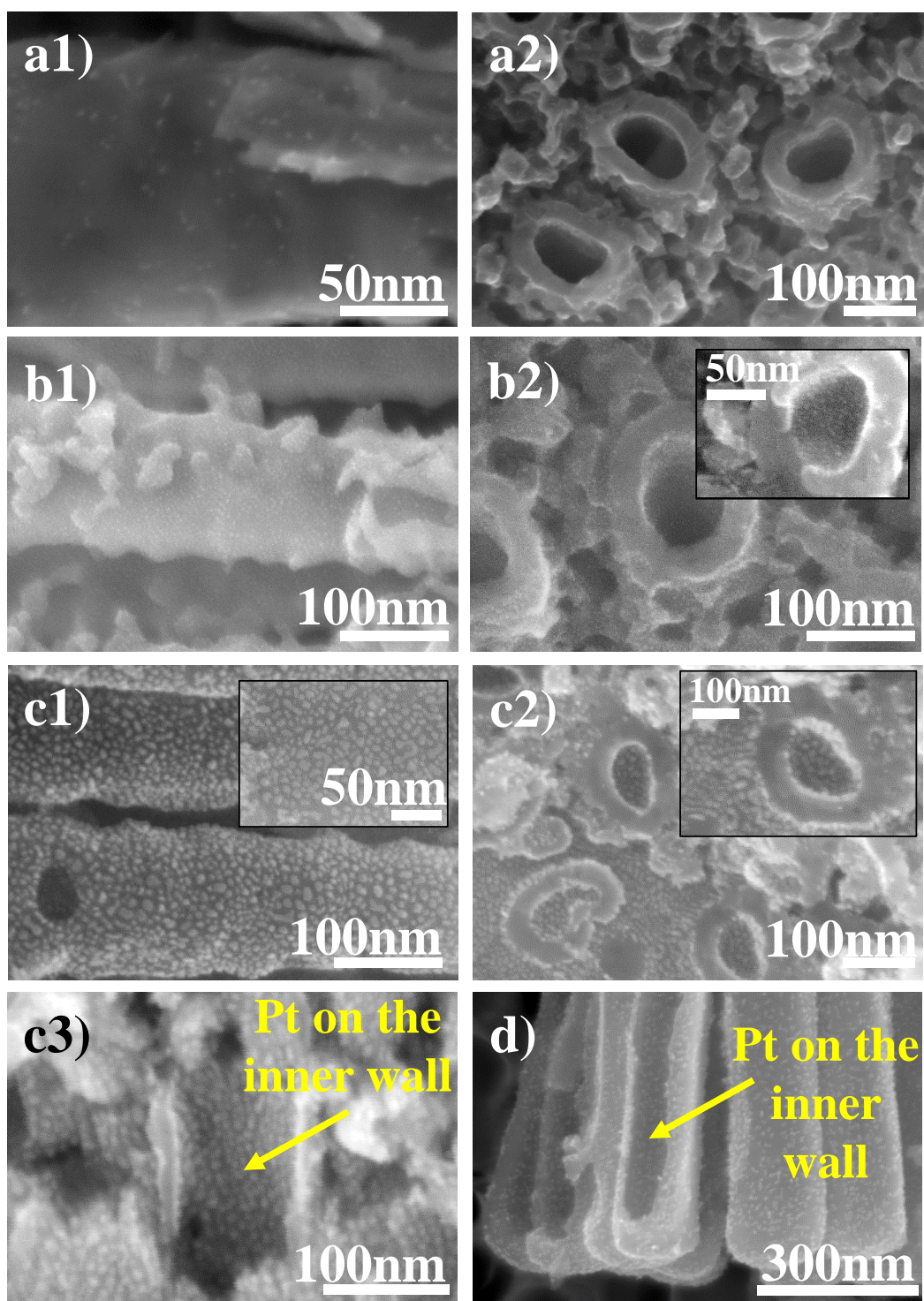


Figure S1 SEM images show ALD Pt deposited SP NTs: at 2 cycles a1) side view of single tube, a2) view of cracked-off nanotubes: at 10 cycles b1) side view of single tube and b2) view of cracked-off tubes: at 20 cycles c1) side view of single tube, c2) view of cracked-off tubular layer and c3) view of Pt particles on the inner walls. d) SEM image of close-packed NTs at 26 cycles from side view shows the uniform decoration of Pt particles on the inner and outer walls of NTs.

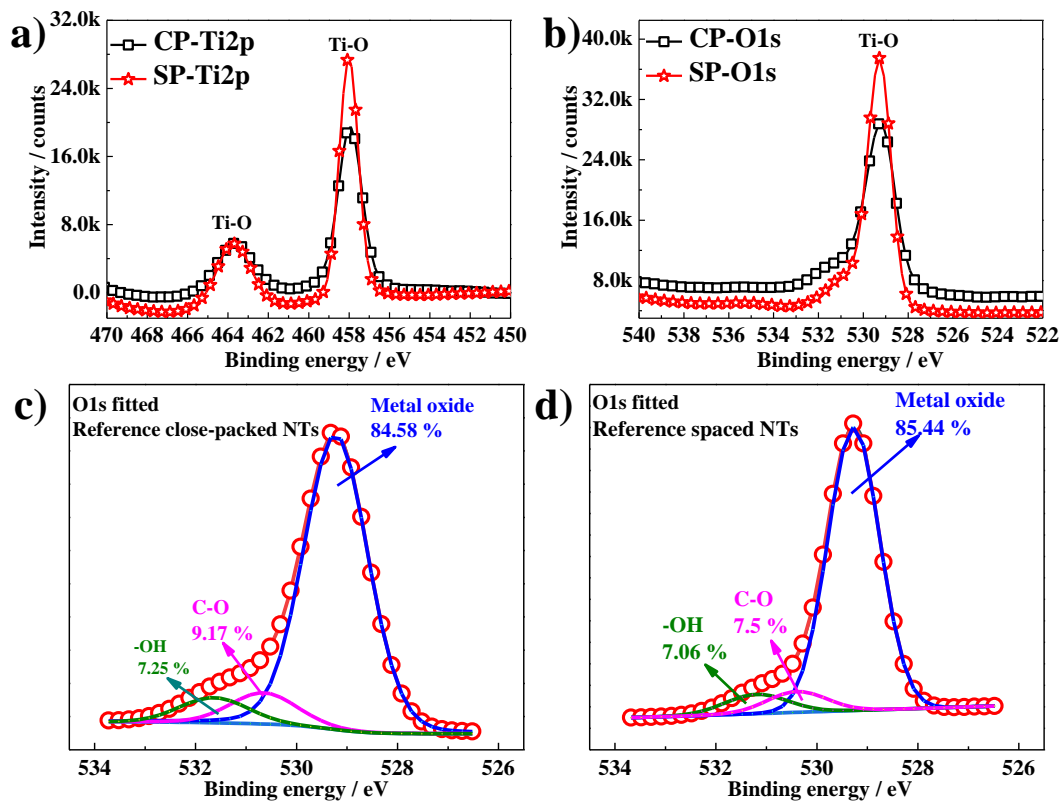


Figure S2 a) High resolution Ti2p spectra of reference spaced and close-packed NTs. b) High resolution O1s spectra of reference spaced and close-packed NTs. Fitted high-resolution XPS of O1s spectra for reference c) close-packed NTs and d) spaced NTs.

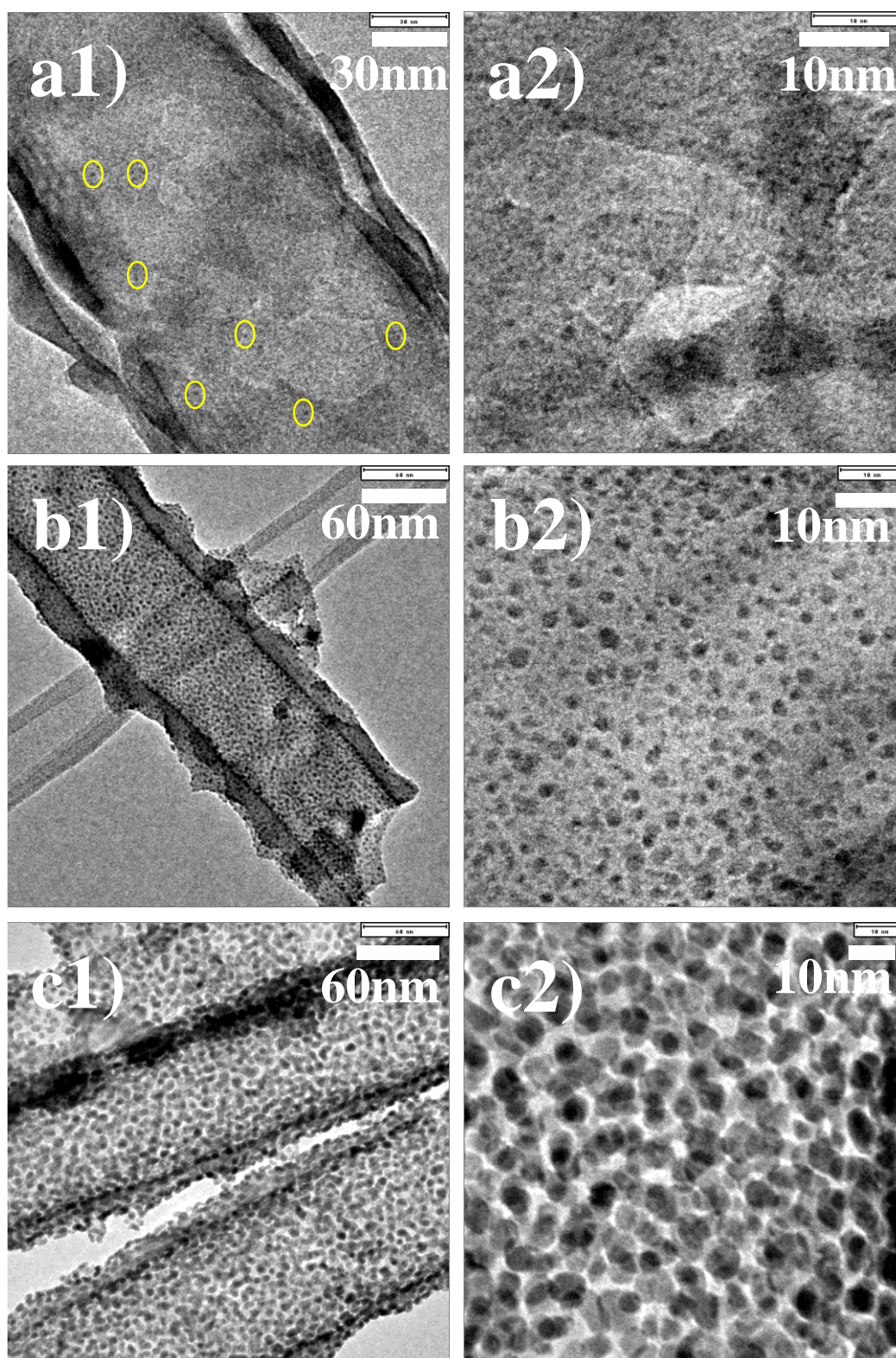


Figure S3 High resolution TEM images of SP NTs at different cycles: a1-a2) 2 cycles, b1-b2)10 cycles and c1-c2) 20 cycles.

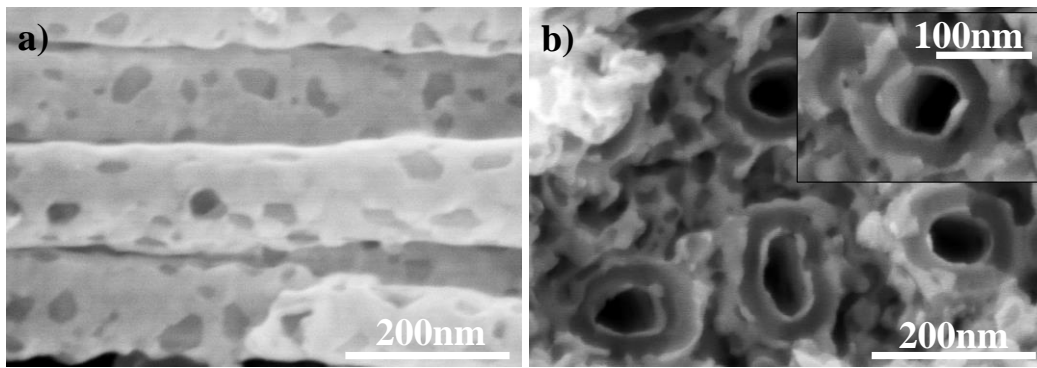


Figure S4 SEM images of spaced NTs at 72 ALD cycles: a) a side view and b) a top view of cracked-off Pt deposited spaced nanotubes.

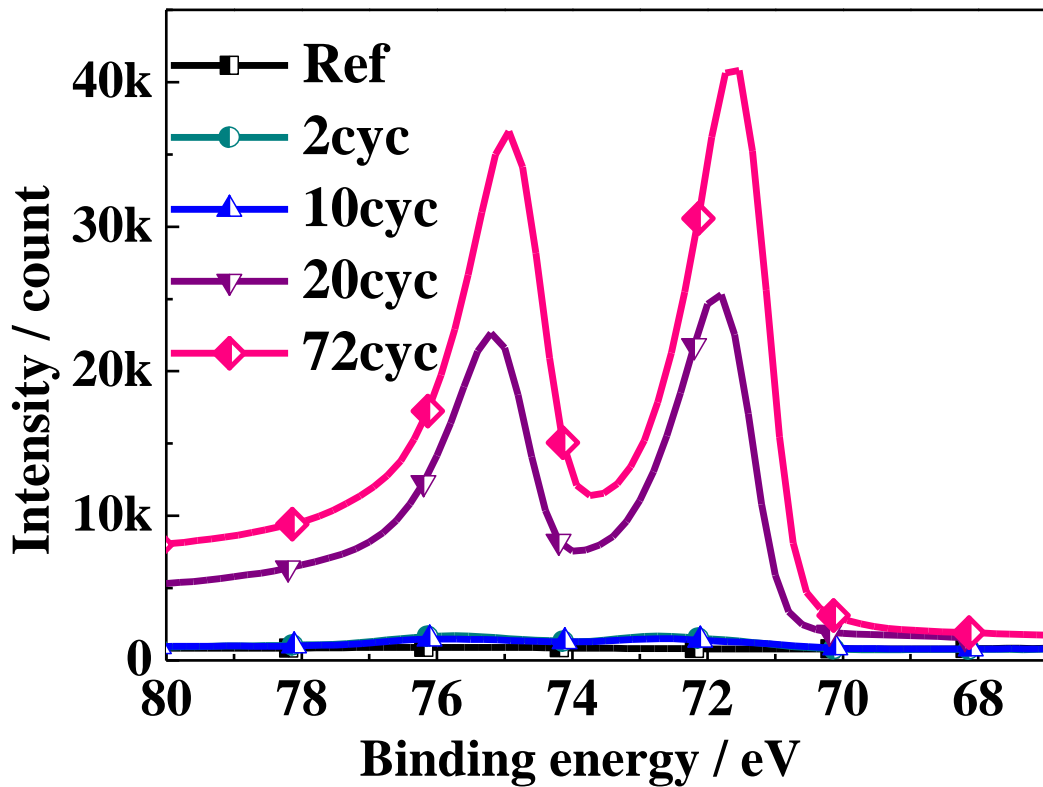


Figure S5 High resolution Pt_{4f} spectra of bare and Pt deposited SP TiO₂ NTs (2, 10, 20 and 72 cycles).

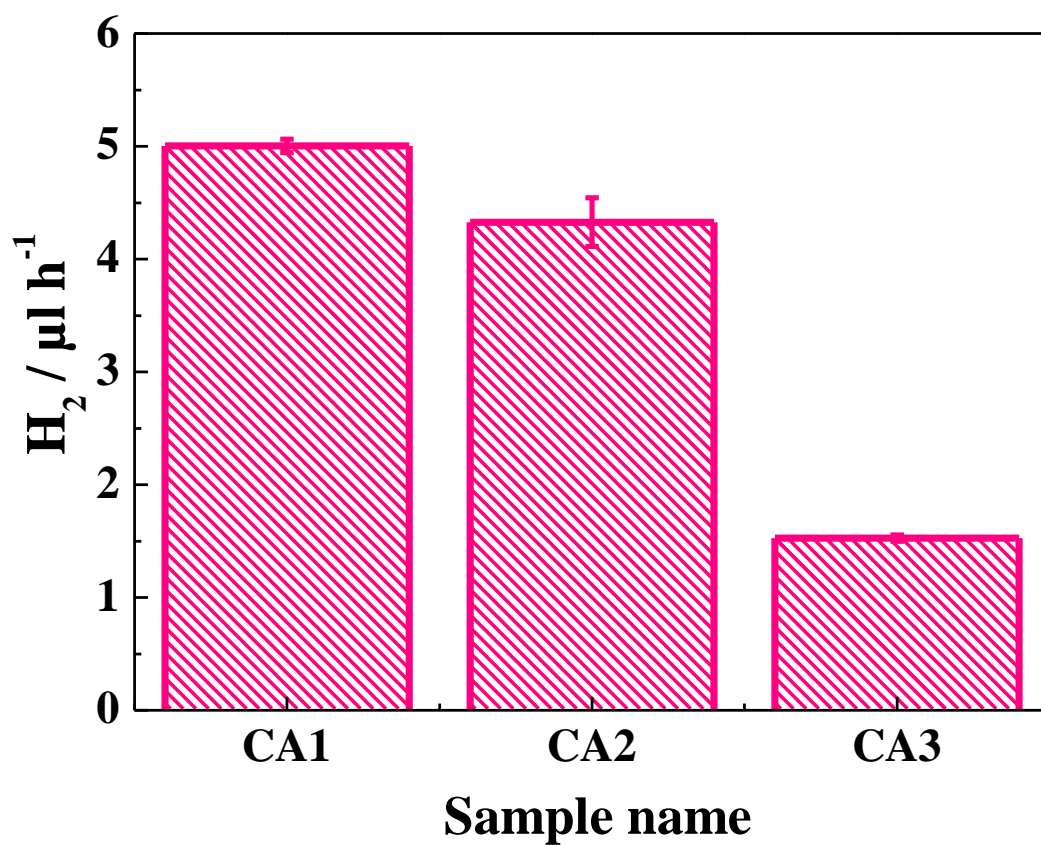


Figure S6 H₂ evolution rate of Pt deposited SP NTs by conventional sputtering approach under solar illumination (A.M 1.5).

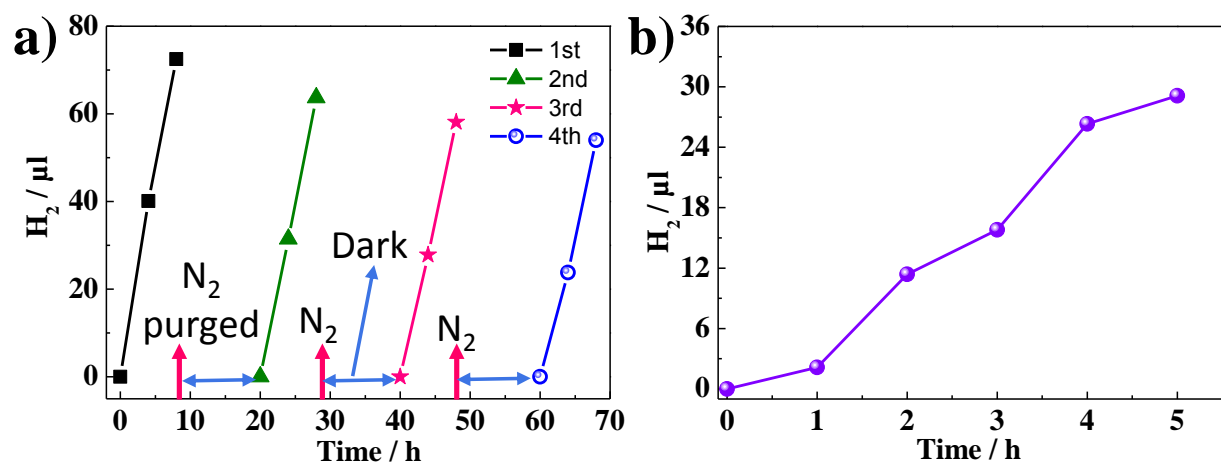


Figure S7 a) Photocatalytic cycling test of spaced NTs at 10 ALD cycles under solar illumination (A.M 1.5). b) Evolution of H_2 from spaced NTs at 10 ALD cycles over time under solar illumination (A.M 1.5).