Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supplementary Information

Efficient Charge Separation and Transportation Using 1D Iron-Sulfide@Titania Heterojunctions as Photoanode for Improved Interface Stability and Photoelectrochemical Activity

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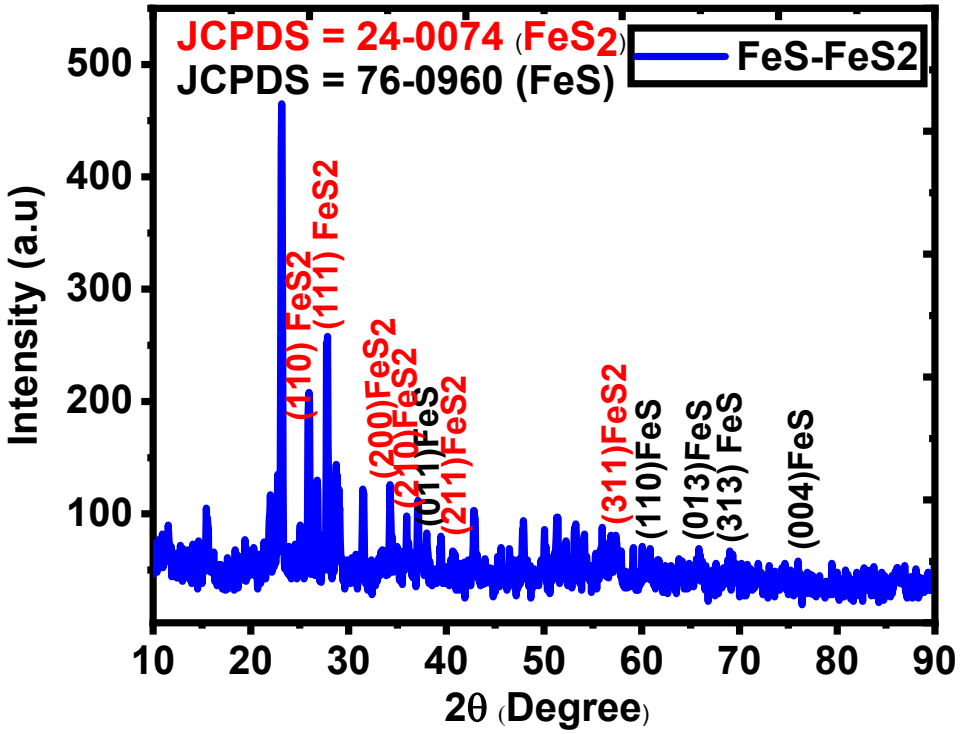

Figure S1. XRD of 50 SILAR cycles of FeS-FeS_2

Figure S1, indicates the presence of FeS and FeS_2 phases in the sample prepared at the substrate in bulk with 50 SILAR cycles. Briefly, FeS possesses 2θ values of 38.03°, 60.83°, 65.86°, 69.06°, 76.10° which corresponds to (011), (110), (013), (313), and (004), while for FeS_2 the 2θ = 25.01°, 27.95°, 34.34°, 35.94°, 39.86° and 57.18° corresponds to (110), (111), (200), (210), (211) and (311) respectively. After matching the 2θ value of FeS-FeS_2 with FeS-FeS_2@TiO_2, it was observed that the peaks intensity decreased and little shifting in it has been occurred at the 2θ = 38.03°, 76.10° which corresponds to (011), (004) planes as of FeS and 2θ = 25.01, 39.86° which corresponds to (110), (211) planes as of FeS_2 respectively, which confirms the successful deposition of FeS-FeS_2 at TiO_2 with low amount.

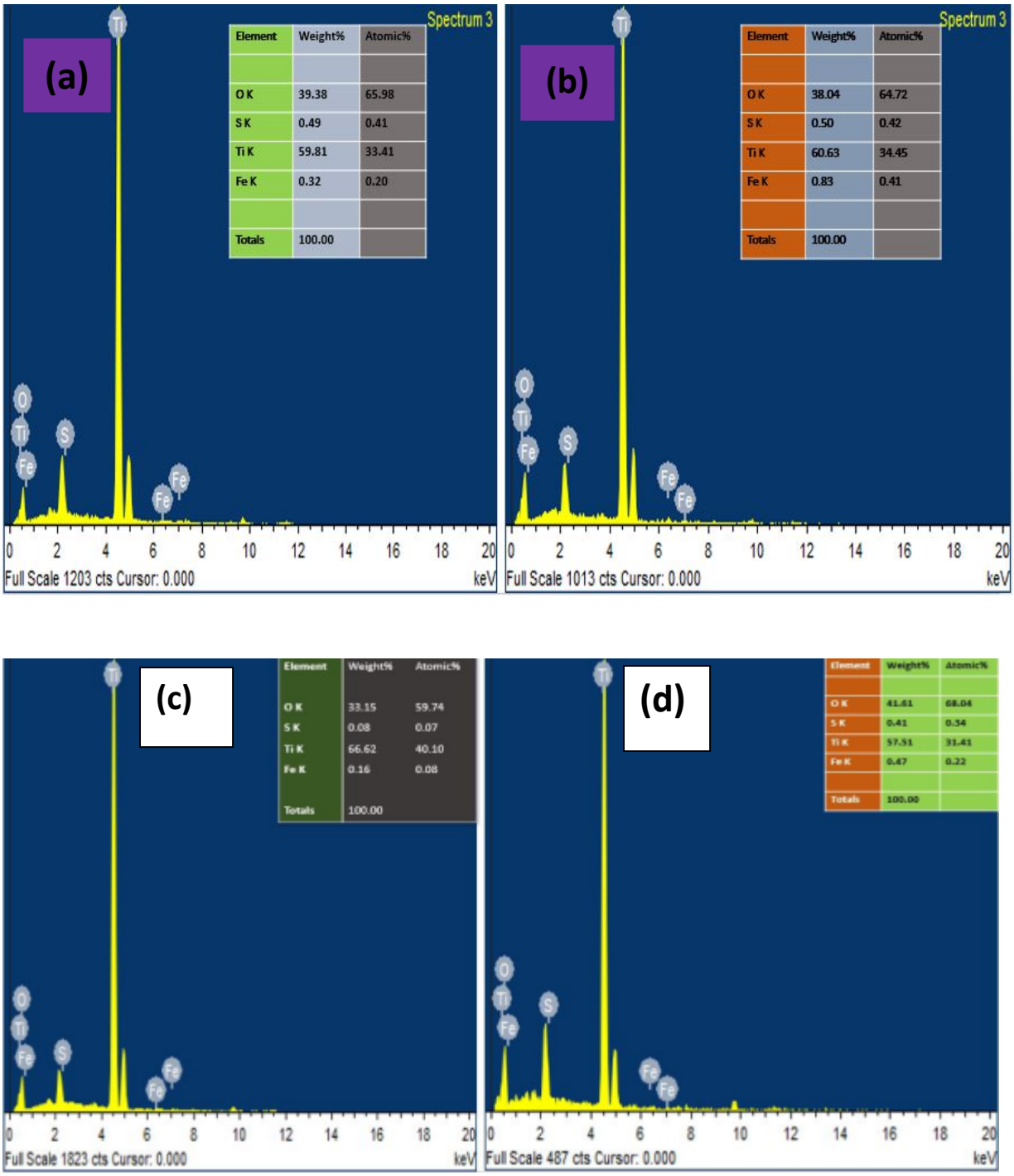

Figure S2. EDS spectrum of (a) 10-FeS-FeS_2@TiO_2 NTs (b) 15-FeS-FeS_2@TiO_2 NTs, (c) 10-FeS-FeS_2@TiO_2 NTs and (d) 15-FeS-FeS_2@TiO_2 NTs

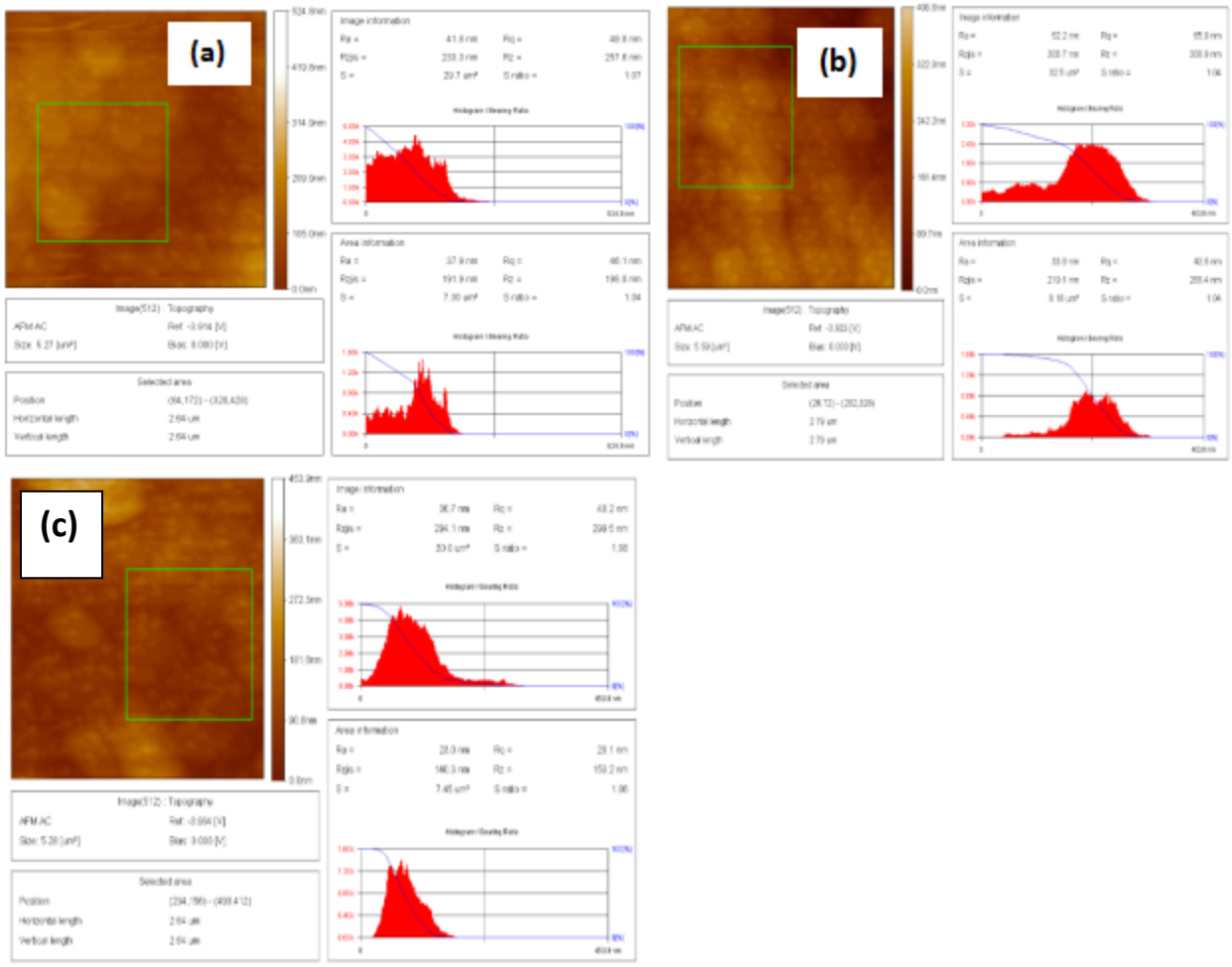

Figure S3 AFM images showing surface roughness of (a) pure TiO_2 NTs (b) 10-FeS-FeS_2@TiO_2 NTs (c) 15-FeS-FeS_2@TiO_2 NTs

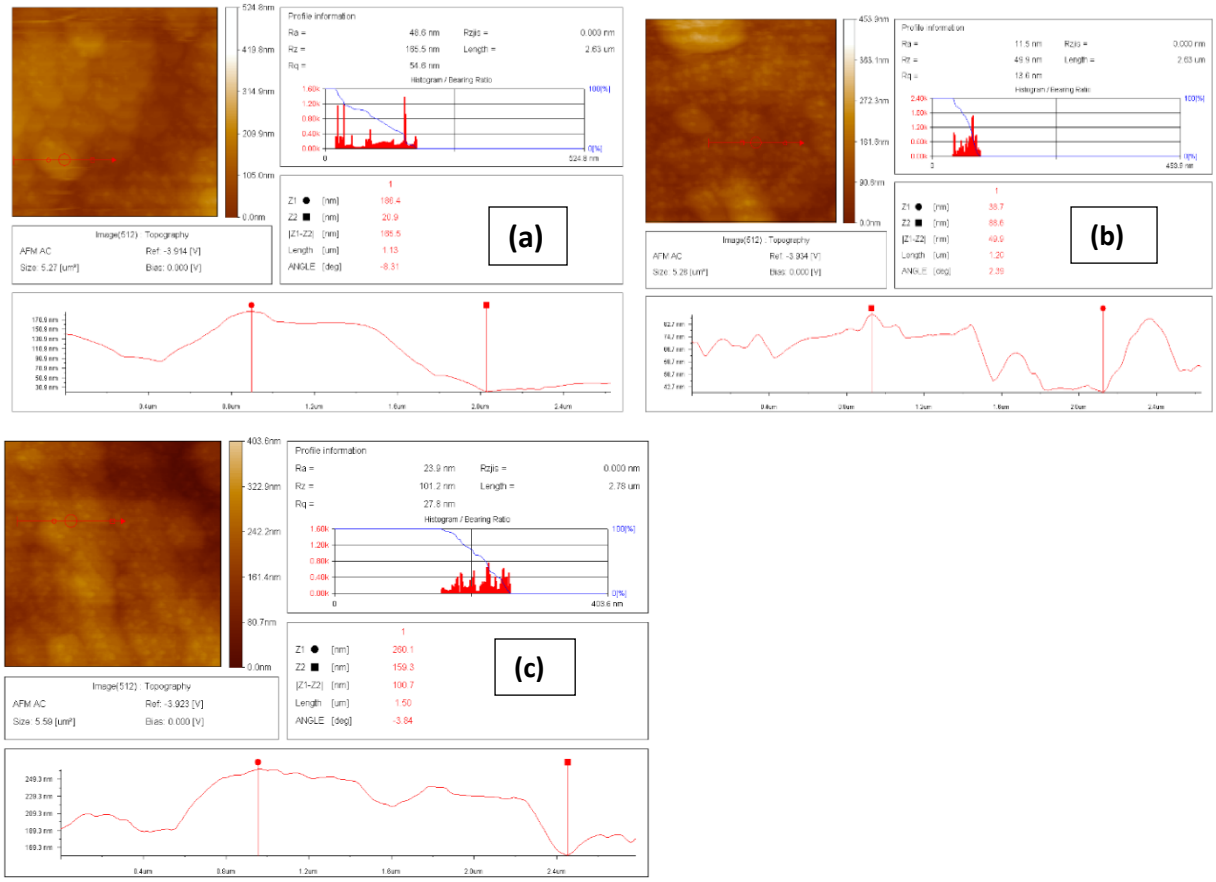

Figure S4 AFM images showing surface thickness of (a) pure TiO_2 NTs, (b) 10-FeS-FeS_2@TiO_2 NTs and (c) 15-FeS-FeS_2@TiO_2 NTs

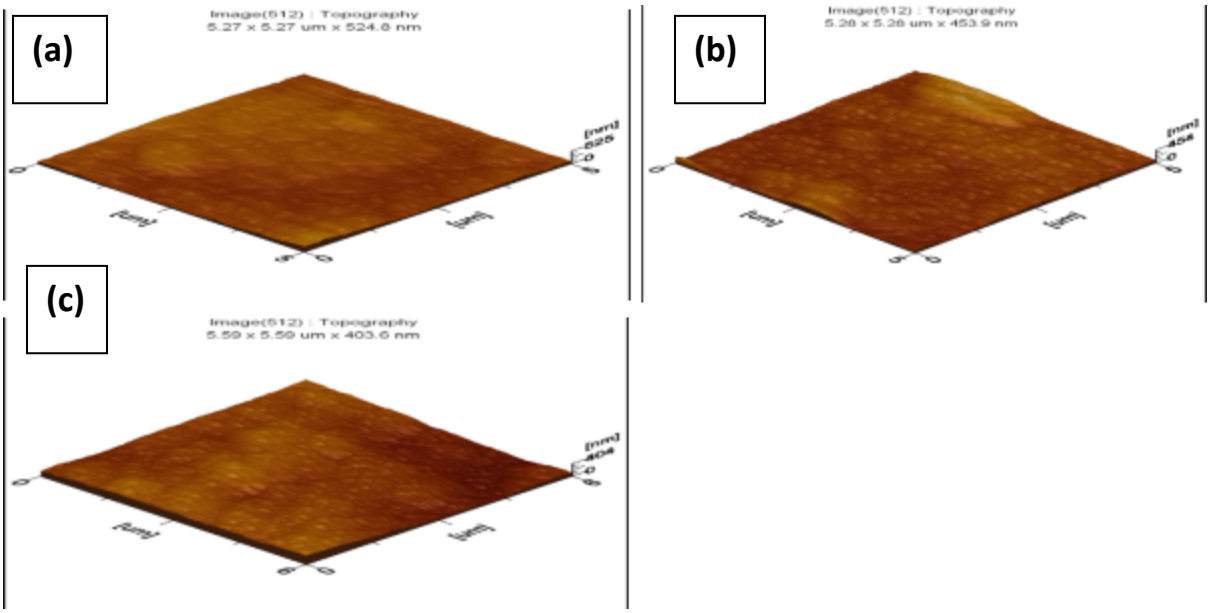

Figure S5 AFM images showing topography of (a) pure TiO_2 NTs (b) 10-FeS-FeS_2@TiO_2 NTs (c) 15-FeS-FeS_2@TiO_2 NTs

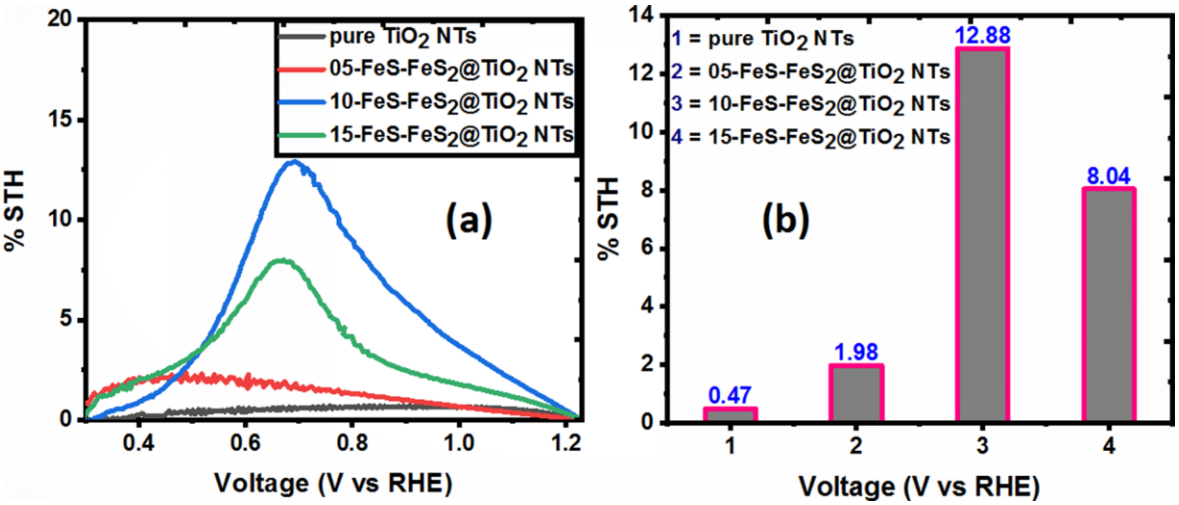

Figure S6. (a) %STH curves (b) %STH Histogram of pure TiO_2 NTs, 05-FeS-FeS_2@TiO_2 NTs, 10-FeS-FeS_2@TiO_2 NTs and 15-FeS-FeS_2@TiO_2@TiO_2 NTs

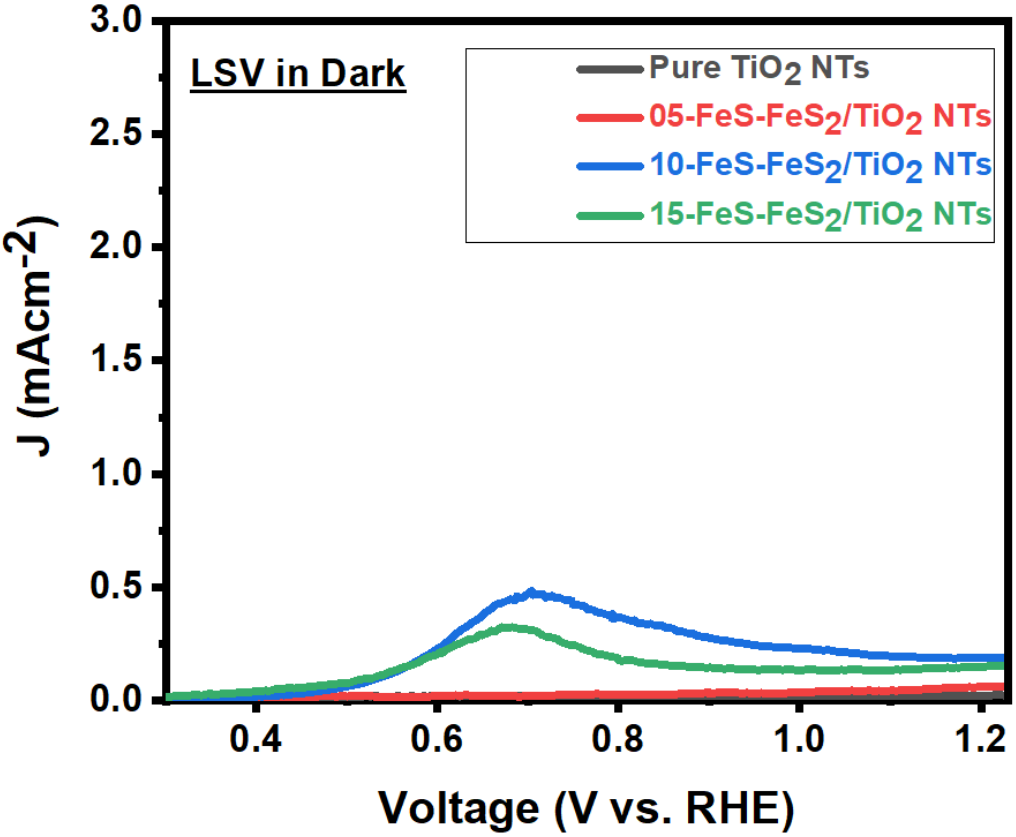

Figure S7. Linear Sweep Voltammetry (I-V) curves in dark