

Electronic Supplementary Information

**Synthesis and Characterization of Barium Silicide
(BaSi₂) Nanowire Arrays for Potential Solar
Applications**

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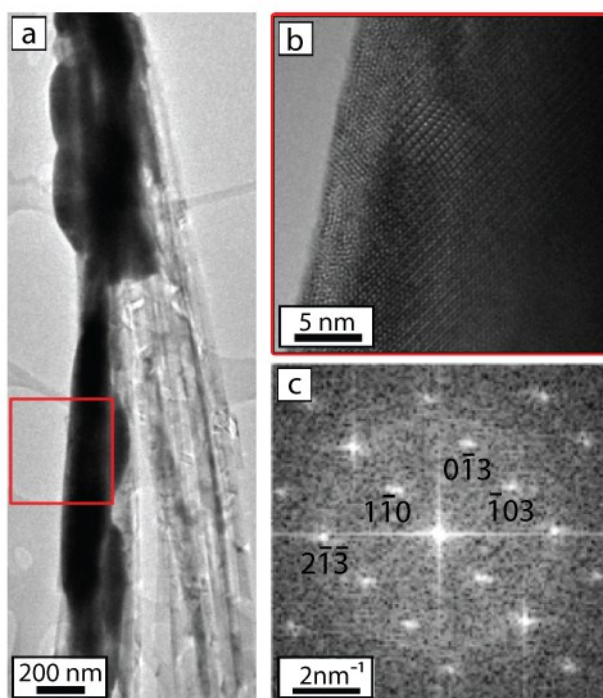


Fig. S1 TEM micrographs of a representative BaSi₂/Si NW heterostructure. (a) Low-resolution TEM micrograph of the NW heterostructure clearly showing two distinct phases (Si is atomically

lighter than BaSi_2 and hence gives the lighter phase contrast among the two materials), (b) lattice-resolved HRTEM micrograph of the selected area in a) along the $[331]$ zone axis of BaSi_2 and (c) the corresponding two-dimensional FFT.

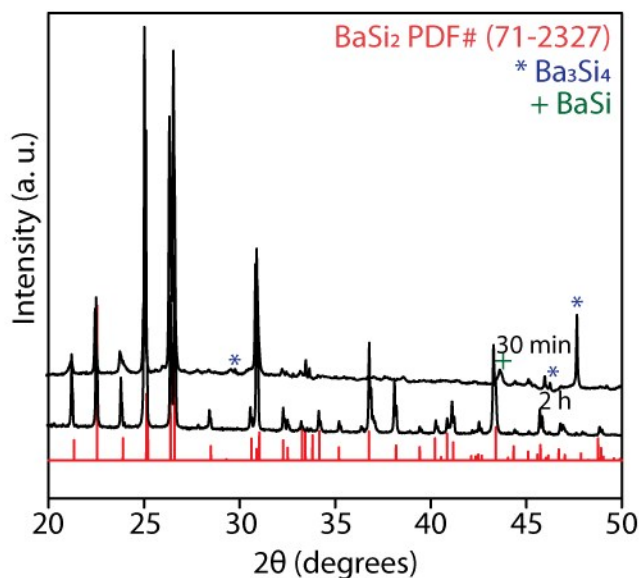


Fig. S2 PXR D of the as-converted NWs formed at 1000 °C for 30 min and 2 h in comparison with the reference pattern for BaSi_2 (PDF# 71-2327), demonstrating the presence of minor Ba_3Si_4 and BaSi phases indicated by * and +, respectively. These impurities were present only in conversion reactions performed for 30 min.

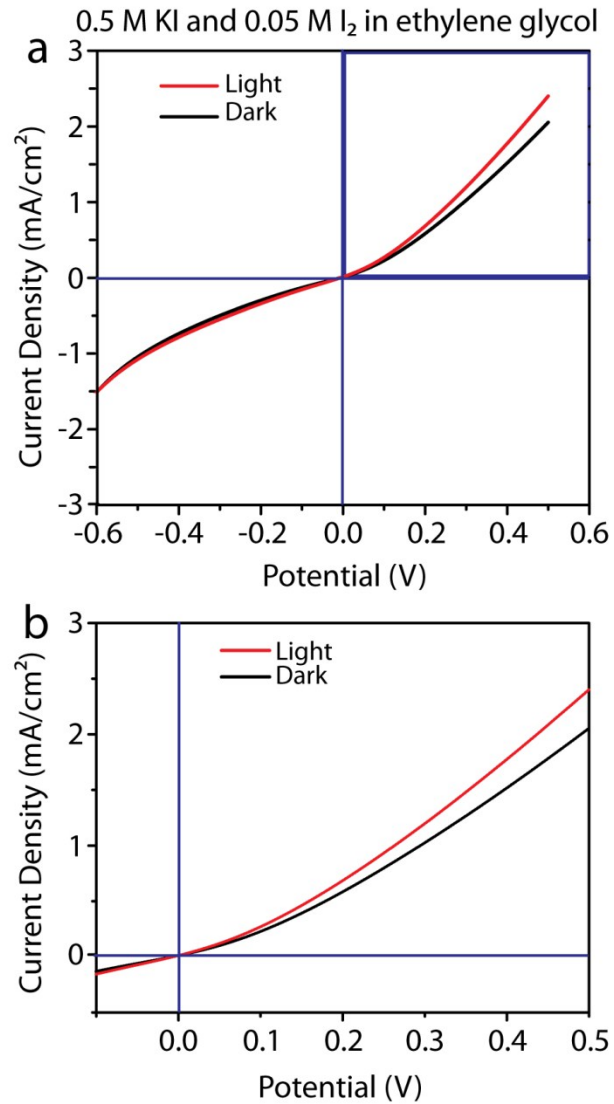


Fig. S3 The current density–voltage (J-V) curves of the PEC electrode fabricated from BaSi₂ NW arrays in a non-aqueous electrolyte of ethylene glycol and 0.5 M KI/0.05 M I₂ redox couple. (a) J-V curve demonstrating weak diode behavior of the BaSi₂ NW array. (b) Zoomed-in view of the photoactive region demonstrating n-type behavior of the BaSi₂ NW arrays at positive applied voltages.