

Supporting information:

Template-directed synthesis of pyrite FeS₂ nanorod arrays with enhanced photoresponse

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METHODS

Synthesis of FeS₂ nanoparticle films

FeS₂ nanoparticle films were directly prepared on FTO substrate by sol-gel method without pre-coating ZnO seed layer. Fe(NO₃)₃·9H₂O was dissolved in a mixture of 2-methoxyethanol and acetyl acetone with a molar ratio 10:1. The solution was stirred at room

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temperature for 2 h to form homogeneous nitrate sol with a concentration of 0.6 M. The substrates were dipped into the sol solution and pulled up using a dip coater at a rate of 200 mm min⁻¹, and then the coated substrates were dried at 100 °C in air for 20 min. This dipping and drying process was repeated for six cycles to obtain uniform-covered films. The finished gel films were annealed at 500 °C for 30 min to form the precursor films. The obtained precursor films and a certain amount of sublimed sulfur powder were sealed in glass ampoules. These sealed samples were annealed at 400 °C for 10 h

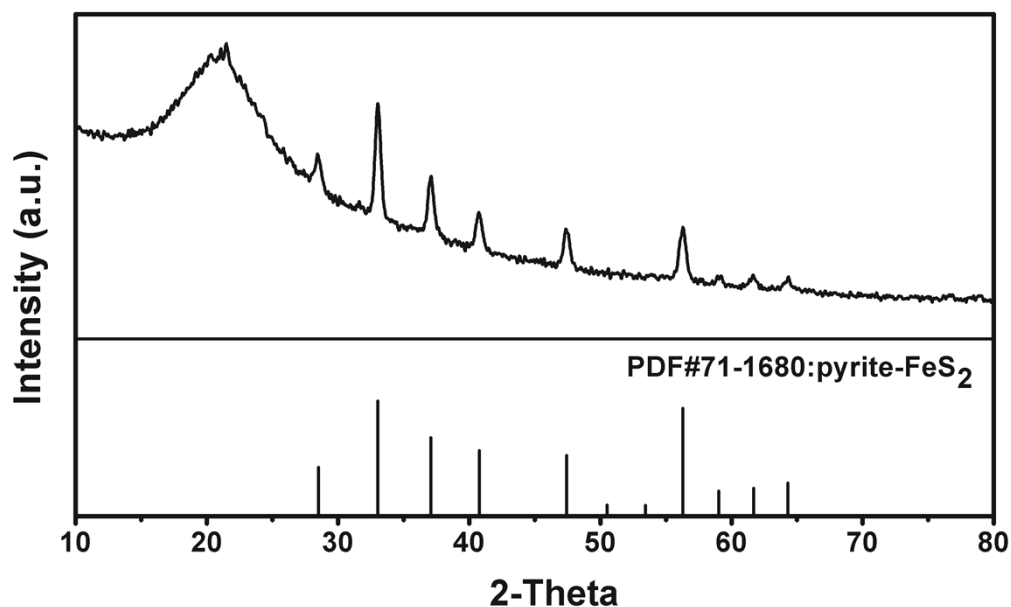


Figure S1. XRD patterns of sol-gel prepared FeS₂ nanoparticle films.

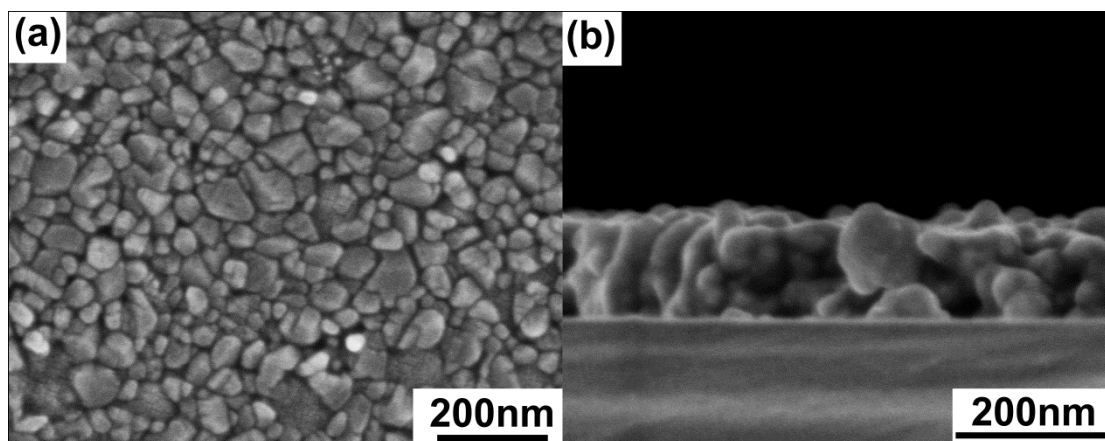


Figure S2. SEM images of sol-gel prepared FeS_2 nanoparticle films: (a) top view and (b) cross-section view.

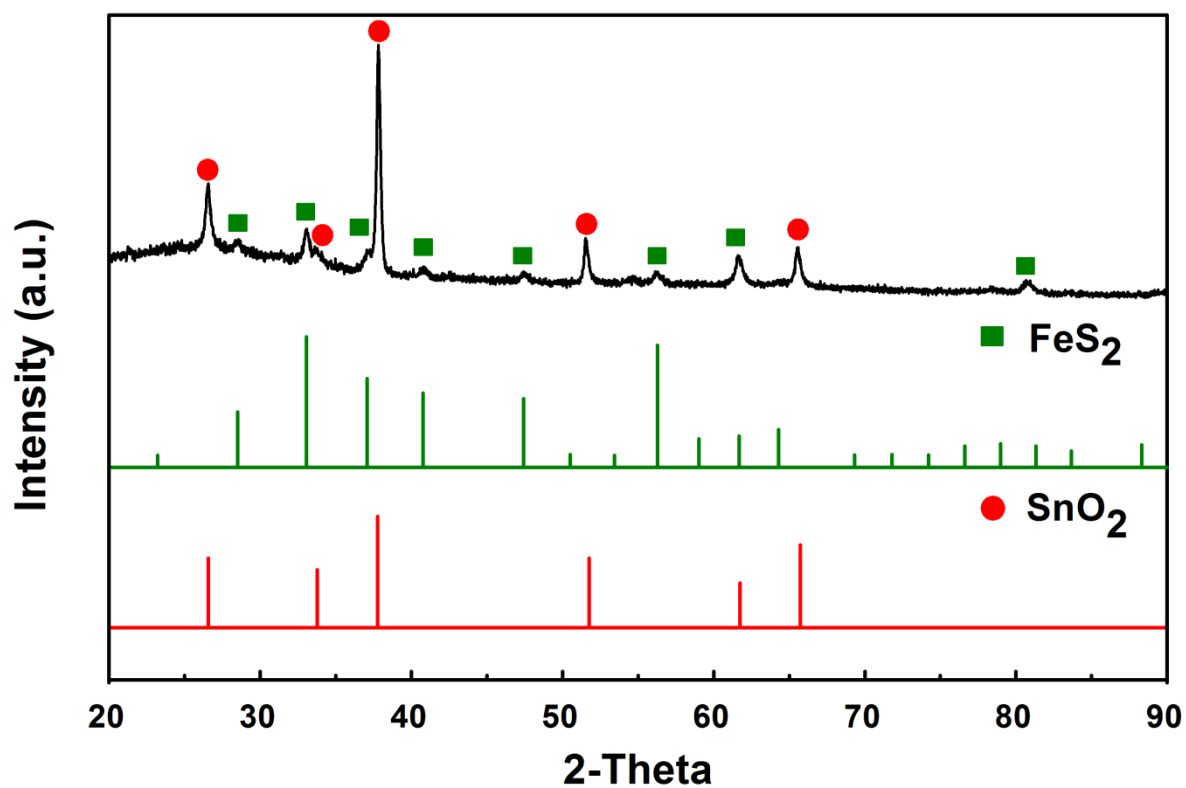


Figure S3. XRD pattern of a pyrite FeS_2 nanorod thin film (immersion in Fe^{3+} solution for 1h) after 1 year storage in a vacuum drier.