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Fabrication of chalcopyrite light-absorbing layers based on nanoparticle and nanowire networks[1] YUHANG REN, PAIFENG LUO, BO GAO, ZEHRA CEVHER, CHIVIN SUN, CUNY, Hunter College — We report on a method of preparing chalcopyrite, CuInGaSe2 (CIGS) light-absorbing layers using low cost air stable ink based on semiconductor nanoparticle and nanowires. The nanoparticles and nanowires are prepared from metal salts such as metal chloride and acetate at room temperature without inert gas protection. A uniform and non-aggregation CIGS precursor layer is fabricated with the formation of nanoparticle and nanowire networks utilizing ultrasonic spaying technique. We obtain a high quality CIGS absorber by cleaning the residue salts and carbon agents at an increased temperature and through selenizing the pretreated CIGS precursors. Our results offer an opportunity for the low-cost deposition of chalcopyrite absorber materials at large scale with high throughput.

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