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Nano-Si: With good performance in solar cells and lithium ion batteries

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We have done much work about silicon (Si) in solar cells and lithium ion batteries (LIBs). In the aspect of solar cell, we used silver (Ag) -assisted chemical etching method to fabricate black silicon solar cells with efficiency over 18% in 2013 and large-scale production was carried out. Besides, nickel, which is cheaper than Ag, was used as assisted metal to fabricate black silicon structure for the first time and surface reflectance of 1.59% was obtained. In the aspect of LIBs, we used Si powders made from broken Si wafers with different electrical resistivity in semiconductor industry as anode material in LIBs. We find out that Si powders made from Si wafers with lower electrical resistivity show better electrochemical performance (higher capacity, and better rate performance) in LIBs. Therefore, broken Si wafers in semiconductor industry should be classified according to their electrical resistivity, which can be convenient for being used as anode raw materials for LIBs.

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