

## Synthesis of Aligned Silicon Nanowires for p-n Heterojunction Diode

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(hsshin@jbnu.ac.kr\*)

In this study, Silicon Nanowire(SiNW) arrays are synthesized using chemical etching method on the p - and n -type of single-crystalline silicon substrates near the room temperature, which used simple, low -cost and Ag -catalyzed solution etching techniques. SiNW arrays were prepared on p - and n -type (100) -oriented Si substrate by an electroless metal deposition and etching method. Then chemical removal of silver deposits using a mixture of HCl/HNO<sub>3</sub>/H<sub>2</sub>O at room temperature led to the formation of SiNW arrays. SiNW arrays are generally aligned parallel to one another and are held together in bundles. The length and diameter of aligned SiNWs could be efficiently controlled through adjusting the etching time and the ratio of etching solution. We plan to apply SiNW arrays to p -n Heterojunction Diode.