

# Supplementary Materials: Enhanced photodegradation activity of hydrogen-terminated Si nanowires arrays with different-oriented crystal phases

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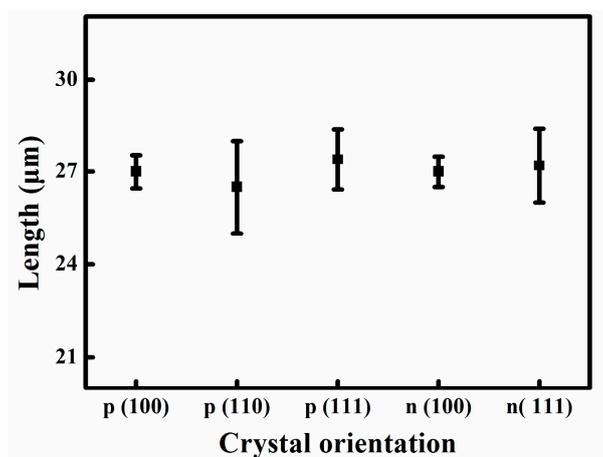
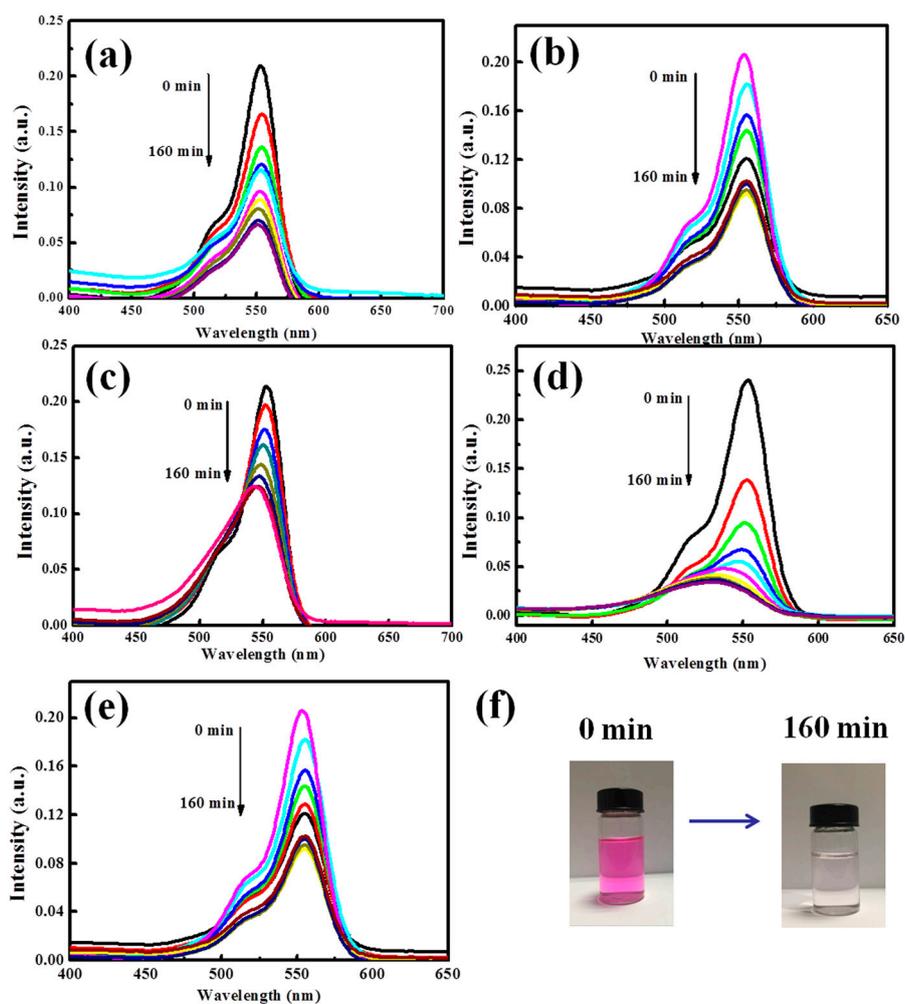
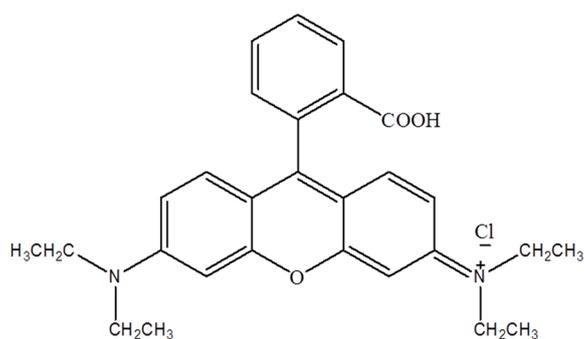


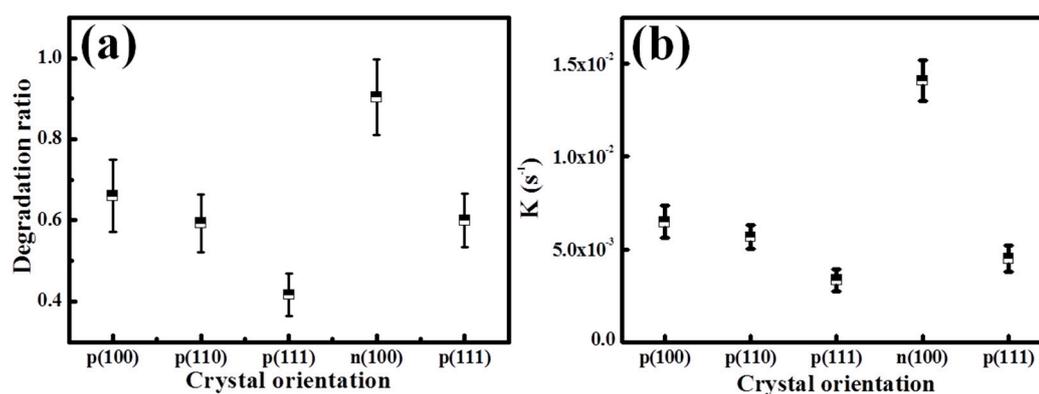
Figure S1. Statistic error map of the Si NWs length with various crystal orientations.



**Figure S2.** UV-Vis spectra of the RhB solutions with the increase of illumination utilizing various oriented Si NWs: (a) p (100); (b) p (110); (c) p (111); (d) n (100); (e) n (111). (f) Corresponding color change of the RhB solution using n (100) Si NWs after 160 min illumination.



**Figure S3.** Chemical molecular formula of RhB molecule.



**Figure S4.** Statistical graph of the degradation ratios (a) and corresponding k values (b) of Si NWs with various crystal orientations.

**Table S1.** Comparison of degradation ratios and k values of the Si NWs with various crystal orientations.

Crystal orientations	p (100)	p (110)	p (111)	n (100)	n (111)
Degradation ratio	67.5%	59.8%	42.8%	92%	60%
K (s <sup>-1</sup> )	6.7×10 <sup>-3</sup>	5.7×10 <sup>-3</sup>	3.5×10 <sup>-3</sup>	1.5×10 <sup>-2</sup>	5×10 <sup>-3</sup>



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