Supporting Information

Crystal Splitting and Enhanced Photocatalytic Behavior of Rutile TiO$_2$ Nano-belts Induced by Dislocations

**Figure S1.** XRD analysis of TiO$_2$ nanostructures prepared with 10 M HCl and 12 M HCl. All peaks correspond to the rutile TiO$_2$ phase.
Figure S2. SEM micrographs of rutile TiO$_2$ nanostructures prepared by hydrothermal synthesis at 150°C for (a) 2 h and (b) 8 h in 10 M HCl. (c) and (d) are TiO$_2$ nanostructures prepared by hydrothermal synthesis at 150°C for 2 h and 8 h, respectively, in 12 M HCl.
**Figure S3.** Crystal structure of rutile TiO$_2$ in three directions (from http://www.chemtube3d.com/solidstate/_rutile(final).htm).
Figure S4. TEM micrographs showing splitting of a rutile TiO$_2$ nano-belt into thin nanowires: (a) from 500 nm wide, (b) from 100 nm, and (c) from 200 nm. (d) a thin TiO$_2$ nanowire about 5 nm wide.
Figure S5. TEM micrographs of rutile TiO$_2$ nano-flowers prepared using 10 M HCl and titanium (IV) butoxide by hydrothermal synthesis at 150°C.
Figure S6. Raman spectra of rutile TiO$_2$ nanoparticles (500-nm-sized), nano-flowers, nano-wires, and nano-belts. The red lines in the spectra of nano-belts and nano-wires are for samples heat-treated at 450°C for 2 h.