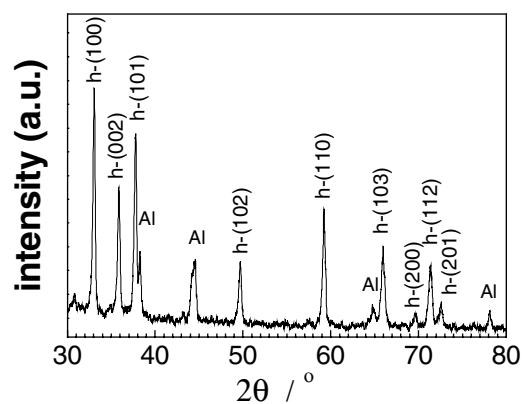
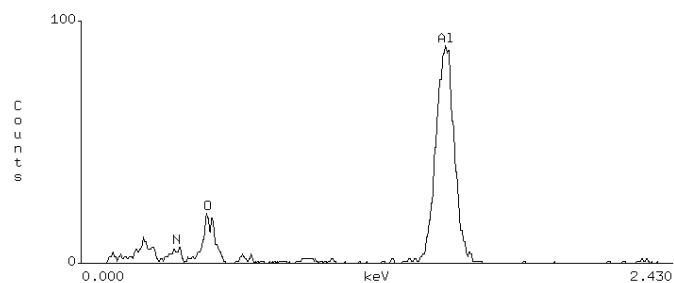


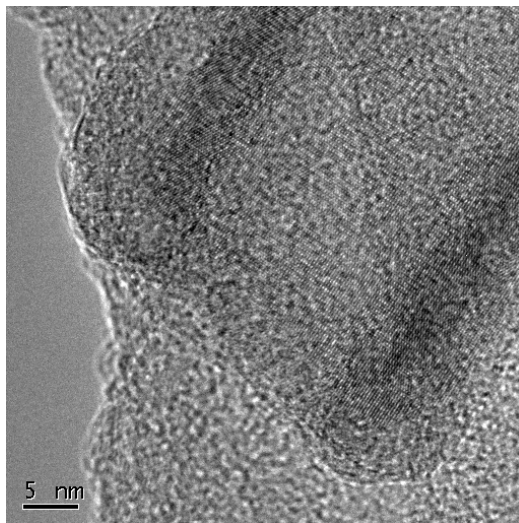
Supporting Information:



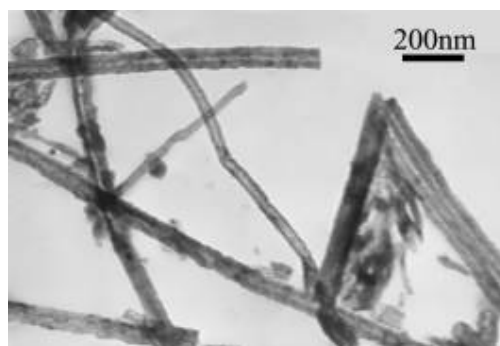
SI 1. XRD pattern of the AlN product. The result shows the product consists of h-AlN and a little un-nitrified Al residues. (with Philips X'pert Pro diffractometer)



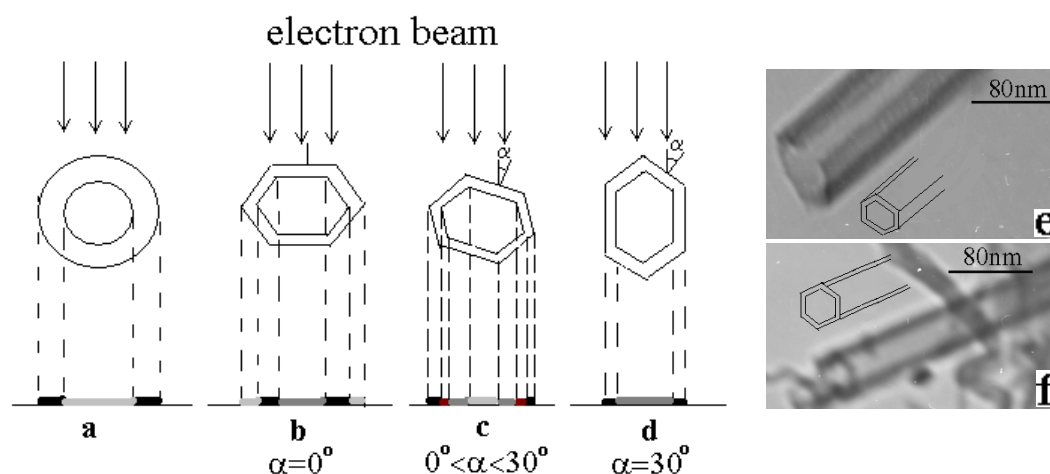
SI 2. EDX pattern of the outer surface of the AlN nanotube wall. It is seen that the outer layer mainly consists of Al and O elements. The size of the electron beam is about 5nm.



SI 3. HRTEM image of the open end of a h-AlN nanotube.



SI 4. The AlN nanotubes with rough walls. These nanotubes are prepared when the NH_3/N_2 gas was introduced at temperature of 950°C .



SI 5. Schematic elucidation for the characteristics of faceted nanotubes with hexagonal cross section in TEM. From the schematic project images of the nanotubular structures from (a) to (d), it is seen that: for the cylindrical nanotube such as carbon nanotube as shown in (a), one could only observe three regions with different contrast in TEM image. However, for the faceted nanotube (in our case, the nanotube with hexagonal cross-section), the image contrast would depend on the relative angle α between the incident electron beam and a certain facet. As to the geometric configurations in (b), (c) and (d), α could vary from 0° to 30° . Correspondingly, one could observe five, seven and three regions with different contrast. The AlN nanotube in (e) (corresponding to Figure 1b in text) exhibits more than five distinguishable contrast regions in accordance with the configuration of (c), while the AlN nanotube in (f) (corresponding to Figure 1c in text) exhibits three distinguishable contrast regions in accordance with the configuration of (d). In addition to the pseudo-hexagonal open ends in (e) and (f), it can be deduced that the AlN nanotubes are faceted with hexagonal cross section.