

## Synthesis, Structure and Properties of One-Dimensional AlN Nanostructured Materials

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The discovery of carbon nanotubes has opened a new fascinating family of one-dimensional nanostructures with great scientific and technological importance. This talk will deal with our recent progress in one-dimensional AlN nanostructured materials.

Despite of the unceasing increase of the nanotubular structures, most of them possess evenly-bent geometry coming from layered compounds, similar to the case for CNTs. Here a template-free synthesis of the faceted single-crystalline h-AlN nanotubes is first reported. This opens a new possibility to extend the nanotubular structures from layered compounds to non-layered compounds and also provides an ideal substrate for the construction of GaN-based nanoheterostructures in future nanoelectronics. In addition, AlN nanowires, nanocones and nanobelts, random or aligned, are also successfully prepared and well-characterized. The promising field emission properties observed for h-AlN nanowires and nanocones points to their important potential applications.