

Effects of growth rate on InP nanowires morphology and crystal structure

ABSTRACT

We report the effects of growth rate on the crystal structure of InP nanowires grown on InP (111)B substrate by metal organic chemical vapour deposition (MOCVD) using gold nanoparticles as catalysts. Results showed that slower growth rate helps to reduce planar defects and the crystal structure changes from wurtzite to zinc-blende with increasing both group III and V precursors flows. Nonetheless, the tapering effect can be reduced with growth rate. High resolution transmission electron microscopy (HR-TEM) confirmed that the crystal structure changes with growth rate.

Keyword: Crystal structure; Growth rate; MOCVD; Semiconducting indium phosphide.