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$GaAs_xP_{1-x}$ Superlattice nanowires. ROMANEH JALILIAN, SHARVIL DESAI, ANTON SIDOROV, ZHIQIANG CHEN, University of Louisville, B. K. PRADHAN, GAMINI SUMANASEKERA, University of Louisville — Semiconductor alloys provide a natural tool to tune the bandgap by managing the spatial spreading and distribution of alloys sequentially along a nanowire. A growth technique has been developed using laser ablation to synthesize ternary alloys of $GaAs_xP_{1-x}$ superlattice nanowires. These superlattice nanowires exhibit very interesting structures; alternating crystalline structures of $GaAs_xP_{1-x}$alloys grow in one direction. Continuous modulation of growth routine, specially the ablation time can control the composition of the segments in the superlattice nanowires. SEM, HRTEM, SAD, EDS, EELS, XRD, XPS have been used to study the morphology, crystalline structures and relative distribution of gallium, arsenic and phosphorus in ternary alloys superlattice. Optical absorption, luminescence and electrical properties have been explored.

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