

## Nanowires - a new area of growth for semiconductors?

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Many III-V semiconductors such as InP and GaAs have a direct bandgap and high carrier mobilities making them a suitable choice for light emitting and high power or high frequency devices. Recently many of these materials have been grown as nanowires; virtually perfect single crystalline thin strands of semiconducting material synthesized by means of vapor-liquid-solid pulsed-laser-deposition. The dimensions of these wires are such that quantum effects can be expected. In addition, semiconductor heteroepitaxial growth can be induced providing options to build semiconductor structures that cannot be realized in thin films based semiconductor processes. This paper aims to provide an overview of possibilities associated with the use of semiconducting nanowires. To exemplify the potential scope of the use of nanowire semiconductors the discussion will focus on the electrical and optical properties of InP nanowires in relation to the effect of the wire diameter on the bandstructure. Secondly, results and consequences of heteroepitaxial growth experiments combining group IV and III-V semiconductors will be addressed.

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