

# Scalable and Cost-Effective Nanowire Fabrication Using Ultrafast Laser with Optical 4f Laser Energy Modulation

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*Nanowires have always been a research hotspot due to their unique electrochemical, optical, and mechanical properties, particularly in their application as negative electrode materials for lithium-ion batteries. The traditional laser ablation method for preparing nanowires involves gas-phase growth by heating the target material to form high-temperature concentrated steam, which results in complex equipment and high costs. In light of this, this paper proposes the use of an ultrafast laser with an optical 4f system for laser energy distribution modulation to directly process nanowires on the target material. This method is simple and cost-effective, making it suitable for large-scale, low-cost preparation of nanowires.*

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