

Laser Ablation of Individual Single Walled Carbon Nanotubes



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This talk describes results on the selective ablation of individual single walled carbon nanotubes by use of intense picosecond laser pulses. Linearly polarized pulses ablate only those tubes that are oriented substantially along the polarization direction. When applied to random submonolayer networks of tubes on solid supports, this procedure can produce collections of aligned tubes oriented perpendicular to the polarization direction. Detailed examples highlight essential aspects of the approach and some features of the underlying physics that governs the process. Thin film transistors that use networks of tubes that have been laser processed in this manner show extremely high orientational anisotropy in the effective mobility. The results could be important for transistors that have potential applications as sensors or logic elements in macroelectronic systems or for optical elements with highly anisotropic properties.