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Synthesis of Carbon Nanotube Forests on Deep-Etched Patterns for Light Absorption[1] CHRISTIAN LANGE, T.-C. SHEN, Utah State University — An ideal black surface should have low reflectance uniformly across the spectrum of electromagnetic radiation. Black paints are not ideal because they have specific absorption peaks and bands. Vertically aligned nanopillars of proper shapes and physical properties are good candidates, but the fabrication and oxidation in air are challenging. Carbon nanotube (CNT) forests could be a cheap alternative but the optical properties are sensitive to the density, length, and alignment of the CNTs in a forest. Additionally, the reflectance spectra of nanopillars always rise sharply from a cutoff wavelength. Our approach to extend the cutoff wavelength is to create a modulation length scale. The fabrication of deep-etched Si substrates and findings of CNT growth on these patterned surfaces will be presented.

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Christian Lange
Utah State University

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