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Arrays of aligned carbon nanotubes act as nano-antennae to receive and transmit light Z.F. REN, Y. WANG, K. KEMPA, T. KEMPA, J. RYBCZYNSKI, A. HERCZYNSKI, Boston College, B. KIMBALL, J.B. CARLSON, Natick Soldier Systems Center, G. BENHAM, Megawave, W.Z. LI, Florida International University, BOSTON COLLEGE COLLABORATION, NATICK SOLDIER SYSTEMS CENTER COLLABORATION, MEGAWAVE COLLABORATION, FLORIDA INTERNATIONAL UNIVERSITY COLLABORATION — We present optical measurements of random arrays of aligned carbon nanotubes, and show that the response is consistent with conventional radio antenna theory. We first demonstrate the *polarization effect*, the suppression of the reflected signal when the electric field of the incoming radiation is polarized perpendicular to the nanotube axis. Next, we observe the interference colors of the reflected light from an array, and show that they result from the *length matching* antenna effect. This antenna effect could be used in a variety of optoelectronic devices, including THz and IR detectors, solar cells, optical switches and computers, etc.

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