Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Optical Trapping and Integration of Semiconductor Nanowire Assemblies in Water ALEKSANDRA RADENOVIC, ELIANE TREPAGNIER, HARI SHROFF, JAN LIPHARDT, UC Berkeley, Department of Physics, PETER PAUZAUSKIE, PEIDONG YANG, UC Berkeley, Department of Chemistry, JAN LIPHARDT TEAM, PEIDONG YANG TEAM — The use of nanowires in scientific, biomedical, and microelectronic applications is greatly restricted due to a lack of methods to assemble nanowires into complex heterostructures with high spatial and angular precision. Here we show that an infrared single-beam optical trap can be used to individually trap, transfer, and assemble high-aspect-ratio semiconductor nanowires into arbitrary structures in a fluid environment. Nanowires with diameters as small as 20 nm and aspect ratios of above 100 can be trapped and transported in three dimensions, enabling the construction of nanowire architectures which may function as active photonic devices. Moreover, nanowire structures can now be assembled in physiological environments, offering novel forms of chemical, mechanical, and optical stimulation of living cells.

Aleksandra Radenovic
UC Berkeley, Department of Physics

Date submitted: 02 Dec 2005 Electronic form version 1.4