SUPPLEMENTAL INFORMATION

Experimental Methods: In a typical reaction to form titania at the nanotube surface, four 5.0 μL aliquots of a 0.53 mM solution of titanium (IV) bis(ammonium lactato)dihydroxide (Ti[BALDH]) or 30 μL 1M silicic acid (hydrolyzed tetramethyl orthosilicate) were added to 300 μL of a P1R5/SWNT suspension with mixing and 5 minute incubations between additions. The Ti[BALDH] reaction was done in distilled water while the silica precipitation reaction was done in 100 mM sodium phosphate buffer pH 7.5 After the last incubation step, the solution was centrifuged for 5 minutes at 5000 rpm, the pellet was recovered and washed twice with deionized water and once with a 1:1 methanol DI water mixture. In control experiments, little or no reaction with the titania precursor was observed when using SWNTs suspended by the surfactant sodium dodecyl sulfate or a control peptide. Atomic Force Microscopy (AFM) images were collected in Tapping Mode on a Digital Instruments Nanoscope IIIa Multimode Scanning Probe Microscope. Scanning electron microscope (SEM) images were obtained without a conductive coating on an FEI XL30. Transmission electron micrographs were obtained using a Philips EM208 operating at 200 kV with Noran Voyager energy dispersive X-ray analysis system. Raman data were collected on a Renishaw inVia Raman Microscope with ~3 mW power at the sample.

For the conductivity experiments, the samples were mounted on small printed circuit boards with contact pins for external connection (Capital Advanced Technologies, Carol Stream, IL). They were evaluated using the apparatus normally used to determine the spectral external quantum efficiency of polymeric photovoltaic cells. The system is a 50W tungsten lamp attached to a 0.25m monochromator and focused on the device of interest. The signal is synchronously detected using a lock-in amplifier and mechanically chopping the light as it exits the monochromator. A transimpedance amplifier generates an output voltage proportional to the input current. A digital multimeter is used to monitor the average value of the current. A mirror in the monochromator for selecting another source is moved to allow or prevent light from the tungsten lamp to enter the monochromator. A box with switches, batteries and a multi-turn potentiometer is used to selectively apply a bias of up to 6V on the device under test. Reasonable signal to noise ratios can be obtained for chopped currents as small as a few

pA – provided that the dark current is not so large that it overloads the transimpedance amplifier. A TA Instruments TGA 2950 was used for thermogravimetric analysis.

SUPPLEMENTAL FIGURES

Figure S1. The AFM micrograph shows that P1R5 peptide forms spherical nanostructures on mica in the absence of SWNTs.

Figure S2. The effect of SWNTs on the secondary of the P1 and P1R5 peptide. (A) Circular dichroism spectroscopy of P1 peptide with or without SWNTs. The initial loaded concentrations of peptide are the same, but the data for P1 with SWNTs has been normalized in intensity to that of free P1 peptide. (B) Circular dichroism spectroscopy of P1R5 peptide with or without SWNTs.

Figure S3. SEM micrograph of titania nanoparticles obtained using P1R5 peptide without SWNTs

Figure S4. SEM micrograph of titania nanoparticles obtained using P1R5 peptide with SWNTs. Arrows shows SWNTS with partial titania coating.

Figure S5. Thermal gravitational analysis in air of SWNTs coated with titania.

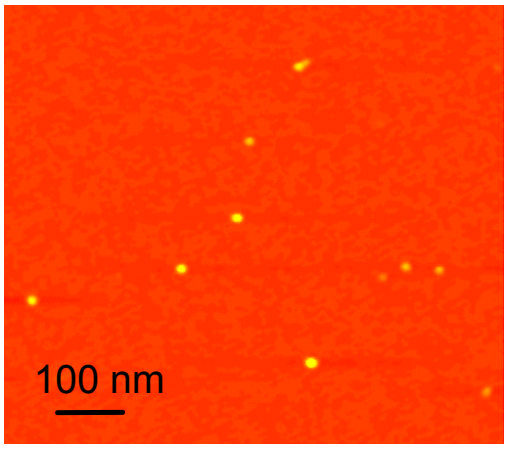

Figure S1

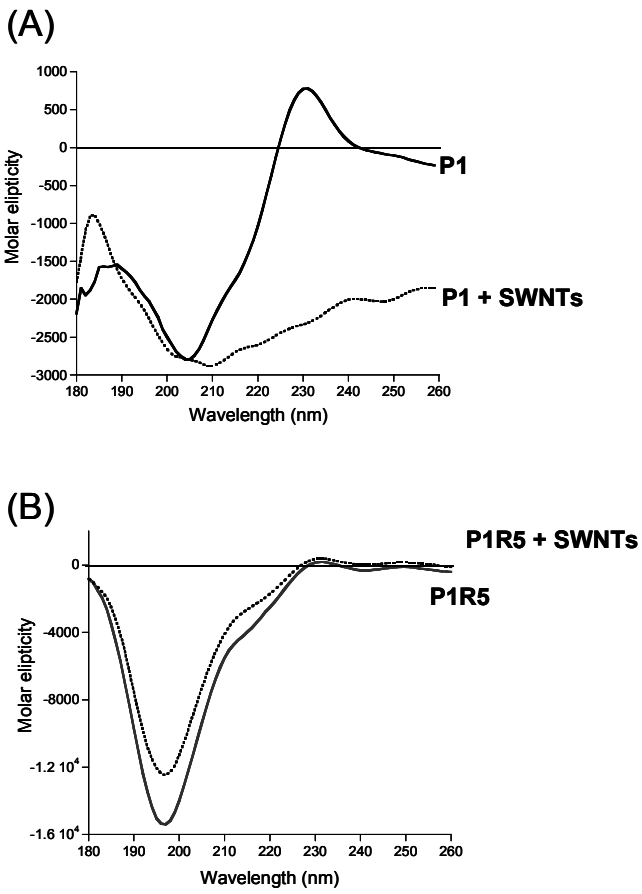

Figure S2

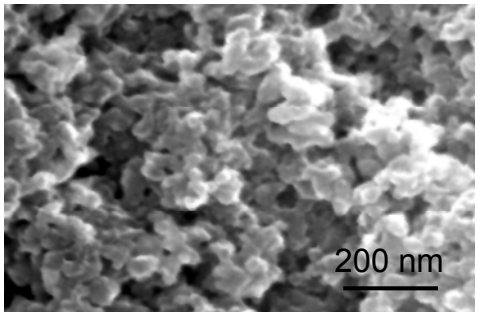

Figure S3

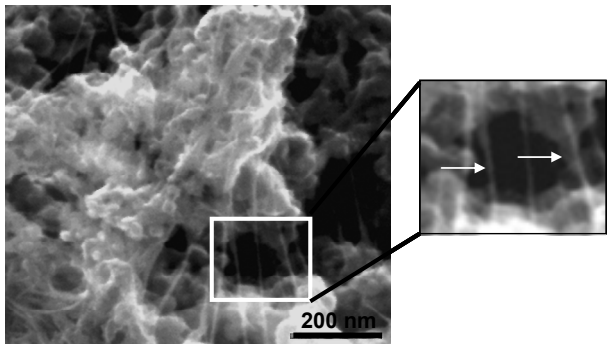

Figure S4

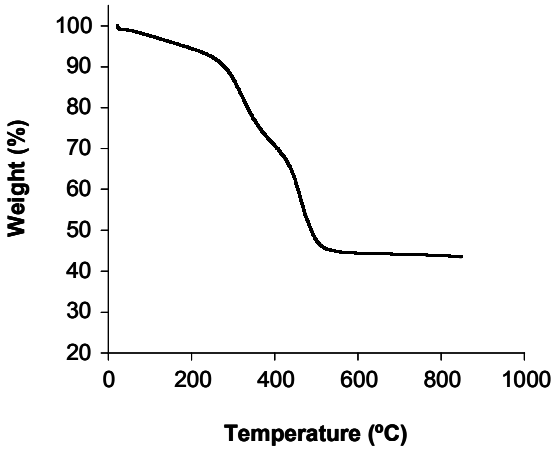

Figure S5