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**Photothermoelectric Effect in Suspended Semiconducting Carbon Nanotubes** LEE ASPITARTE, TRISTAN DEBORDE, TAL SHARF, JOSH KEVEK, ETHAN MINOT, Oregon State University — We have performed scanning photocurrent microscopy measurements of field-effect transistors (FETs) made from individual suspended carbon nanotubes (CNTs).Photocurrent generation in individual carbon nanotube based devices has been previously attributed the photovoltaic effect, in contrast to graphene based devices which are dominated by the photothermoelectric effect. In this work, we present the first measurements of strong photothermoelectric currents in individual suspended carbon nanotube field-effect transistors. In certain electrostatic doping regimes light induced temperature gradients lead to significant thermoelectric currents which oppose and overwhelm the photovoltaic contribution. Our measurements give new insight into the tunable and spatially inhomogeneous Seebeck coefficient of electrostatically-gated CNTs and demonstrate a new mechanism for optimizing CNT-based photodetectors and energy harvesting devices.

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