

Supporting information

rGO-Wrapped Fullerene (C₆₀) Wires

*Jieun Yang[†], Mihee Heo[†], Hyo Joong Lee[‡], Su-Moon Park[†], Jin Young Kim^{†, *}, Hyeon Suk Shin^{†, *}*

[†]Interdisciplinary School of Green Energy and KIER-UNIST Advanced Center for Energy, Ulsan

National Institute of Science & Technology (UNIST), UNIST-gil 50, Ulsan 689-805, Korea.

[‡] Department of Chemistry, Chonbuk National University, 567 Baekje-deokjin-gu, Jeonju-si, Jeollabuk-

do 561-756, Korea

^{*}E-mail: shin@unist.ac.kr, jykim@unist.ac.kr

^{*}To whom correspondence should be addressed.

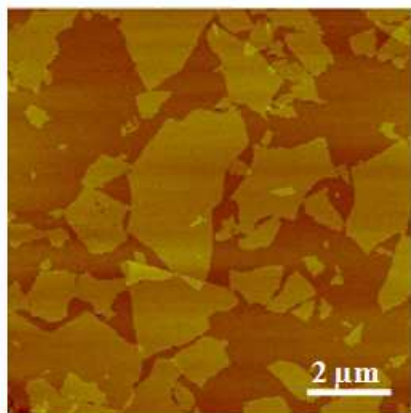


Figure S1. AFM image of reduced graphene oxide (rGO).

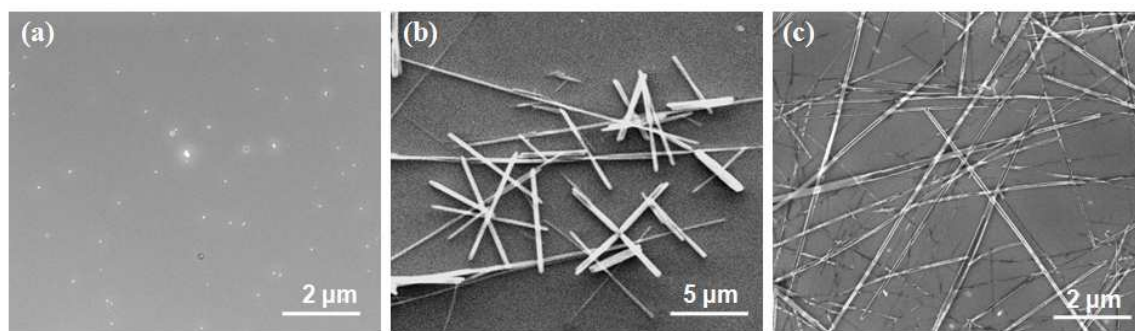


Figure S2. SEM images of C_{60} particles (a), C_{60} wires after dropping IPA for 2 min (b), and C_{60} wires left at 4 °C for 1 h (c).

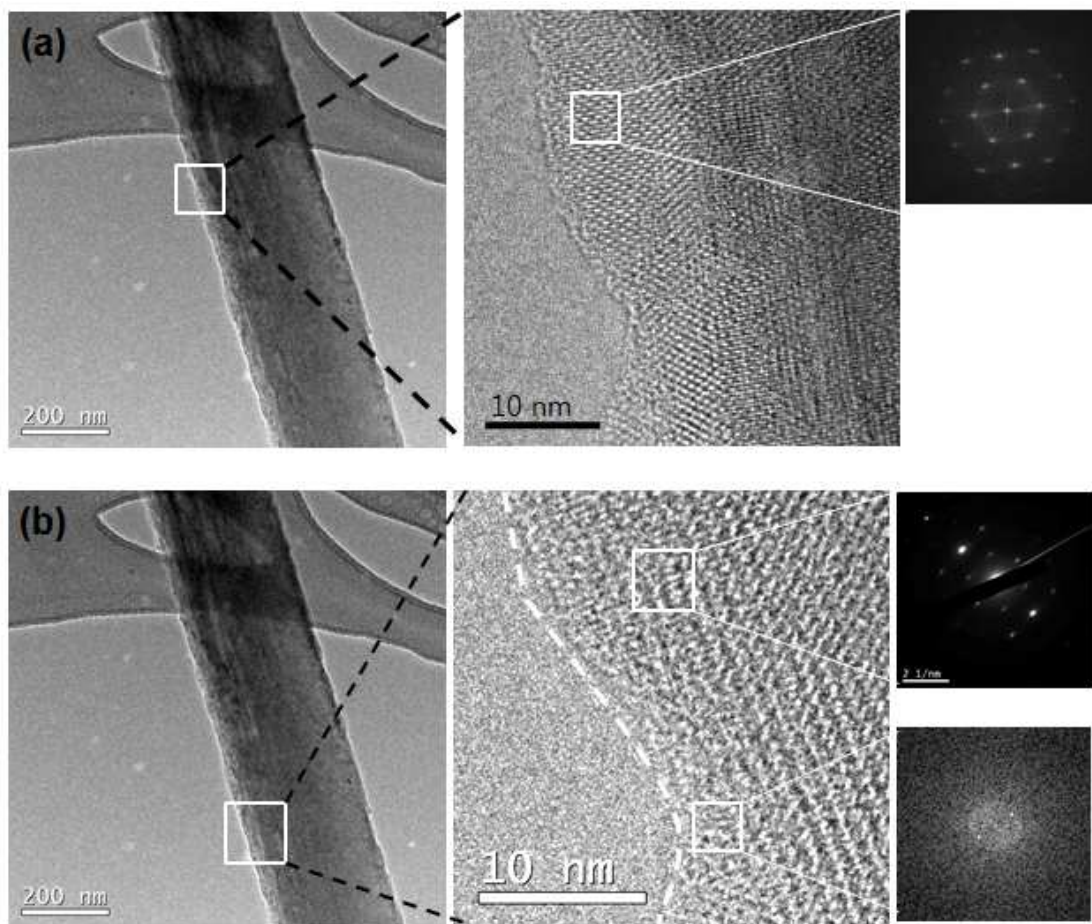


Figure S3. TEM images of a C_{60} wire. (a) The magnified image of the edge area shows crystalline structure from FFT pattern. (b) The magnified image of other edge area shows the amorphous layer.

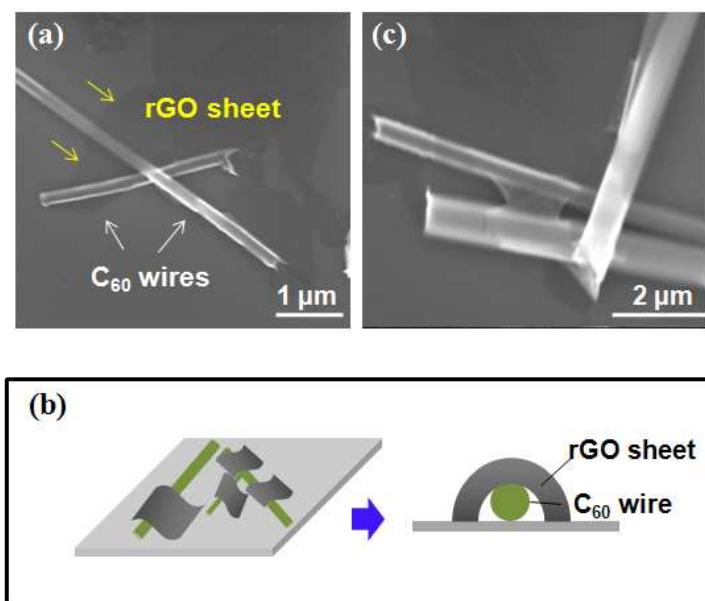


Figure S4. SEM images of C_{60} wires after they were first prepared and then immersed into rGO solution. (a) and (b) most of rGO sheets did not wrap the C_{60} wires, but were randomly laid on them. (c) In a part of the sample, some small rGO sheets wrapped them.

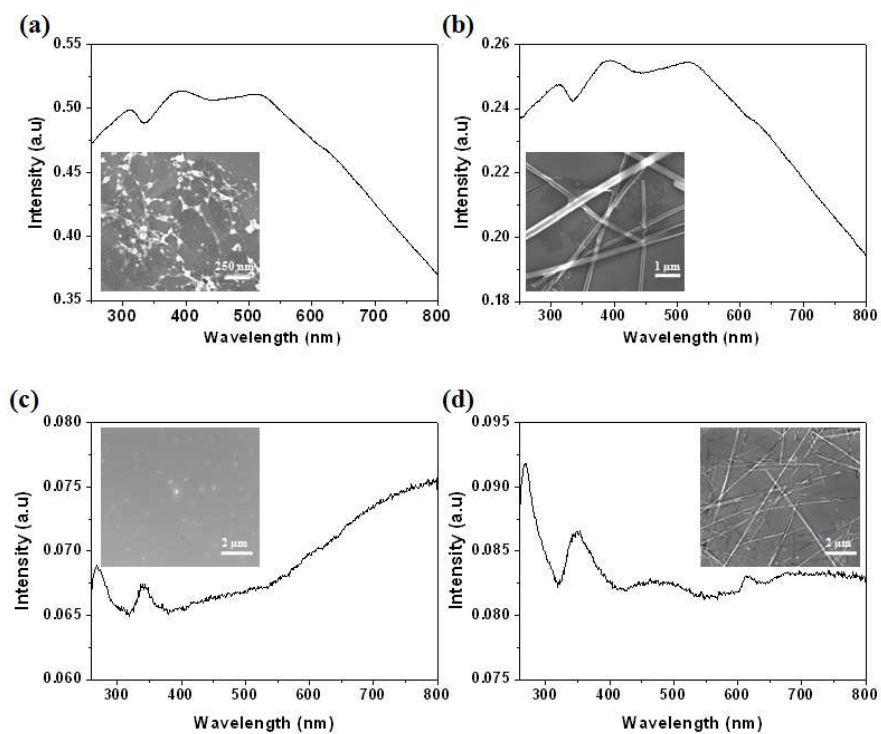


Figure S5. UV-Vis spectra of (a) C₆₀ precipitates (by adding the rGO IPA solution), (b) rGO/C₆₀ wires left at 4 °C for 1h, (c) C₆₀ particles (by adding pure IPA), and (d) C₆₀ wires left at 4 °C for 1h.

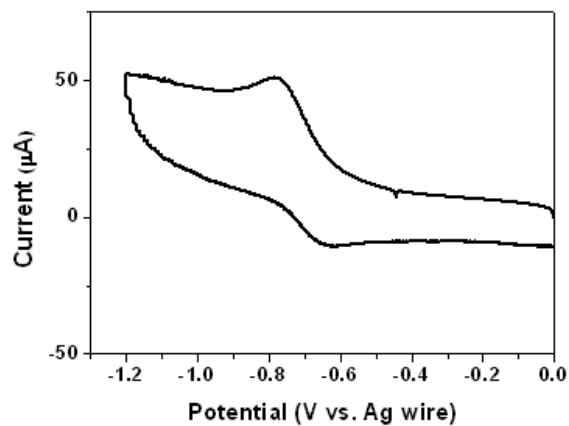


Figure S6. CV curve of rGO on glassy carbon electrode.

Working Electrode: Glassy carbon

Counter Electrode: Pt mesh

Reference: Ag wire

Electrolyte: 0.1 M TBAPF₆ in DMF

Preparation of GO or RGO on glassy carbon electrode: dropping and drying

Fc/Fc⁺: 0.595 V vs. Ag wire

LUMO(eV) = -4.8 – (E_{onset} (vs Ag/AgCl) - E_{Fc/Fc⁺} (vs Ag/AgCl))

E_{red} as -0.55 V, E_{LUMO} = -3.65 V

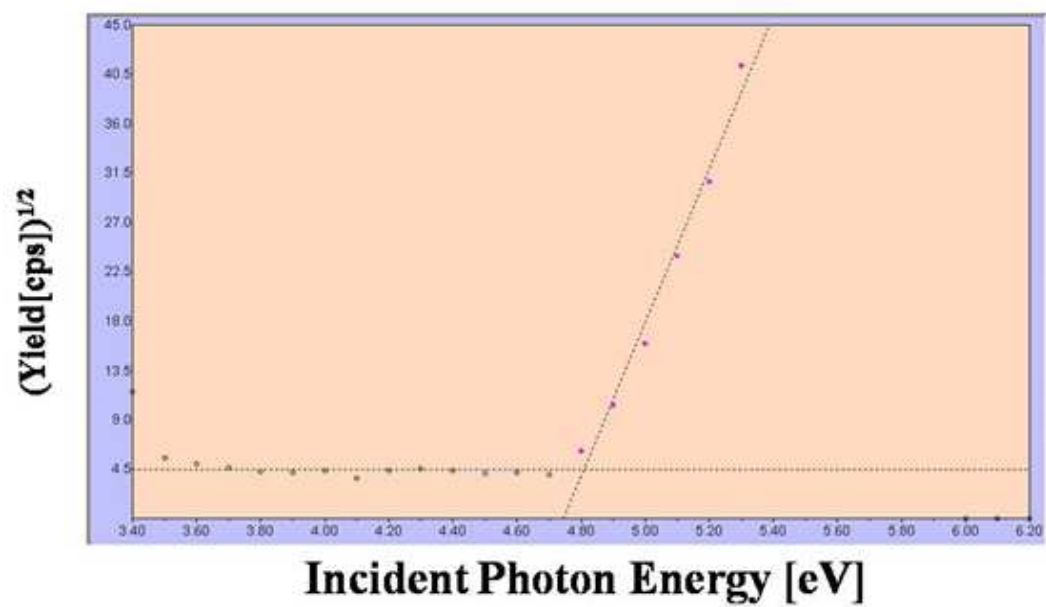


Figure S7. Photoelectron spectrum of rGO.

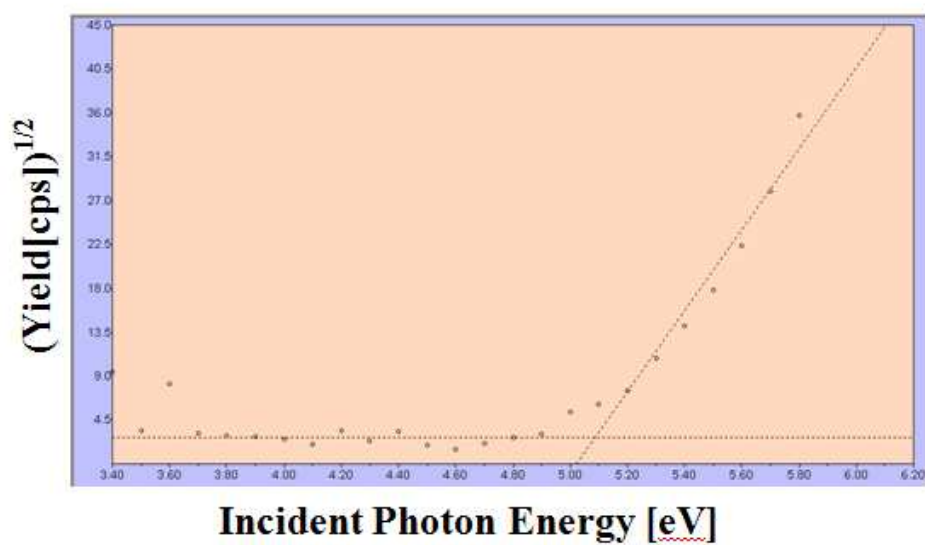


Figure S8. Photoelectron spectrum of C_{60} wires.

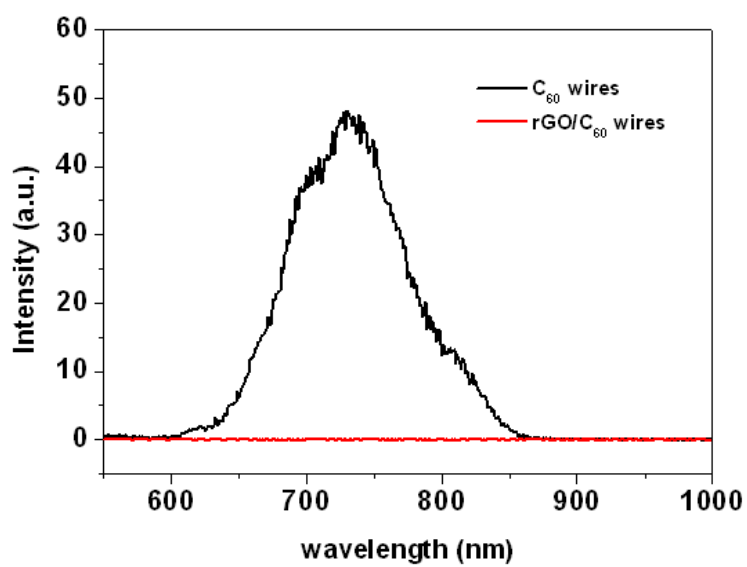


Figure S9. Photoluminescence spectra of C_{60} wires and rGO/C_{60} wires obtained with excitation at 520 nm.

Table S1. Element analysis of graphene oxide and reduced graphene oxide

	Graphene oxide	Reduced graphene oxide
Carbon (wt%)	41.27	63.59
Hydrogen (wt%)	2.78	1.31
Oxygen (wt%)	28.61	13.70
Nitrogen (wt%)	0.00	2.81