

rGO-Wrapped Fullerene (C₆₀) Wires

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The assembly of reduced graphene oxide (rGO) and fullerene (C₆₀) into hybrid wires were successfully performed by employing the liquid-liquid interfacial precipitation (LLIP) method.^[1] C₆₀ wires are first formed and then rGO sheets are coated on surfaces of them. The structural characterization of the rGO/C₆₀ wires was carried out by using UV-Visible spectroscopy and Scanning Electron Microscope.^{[2],[3]} FET devices with rGO/C₆₀ wires were prepared to investigate their electrical properties. The I-V_g curve of the hybrid wires exhibited p-type semiconducting behavior, indicating the hole transport through rGO as a shell layer, whereas pure C₆₀ wires showed n-type behavior in vacuum.^[4] In this presentation, furthermore, we show interesting applications using the hybrid wires like photocurrent generation and a photovoltaic device. The hybrid wires showed a significant enhancement of short circuit current (J_{SC}) when compared with pure rGO and evaporated C₆₀ devices. This improvement can be interpreted that the photocurrent by efficient exciton dissociation is generated between the rGO donor and C₆₀ acceptor.

References

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Figure

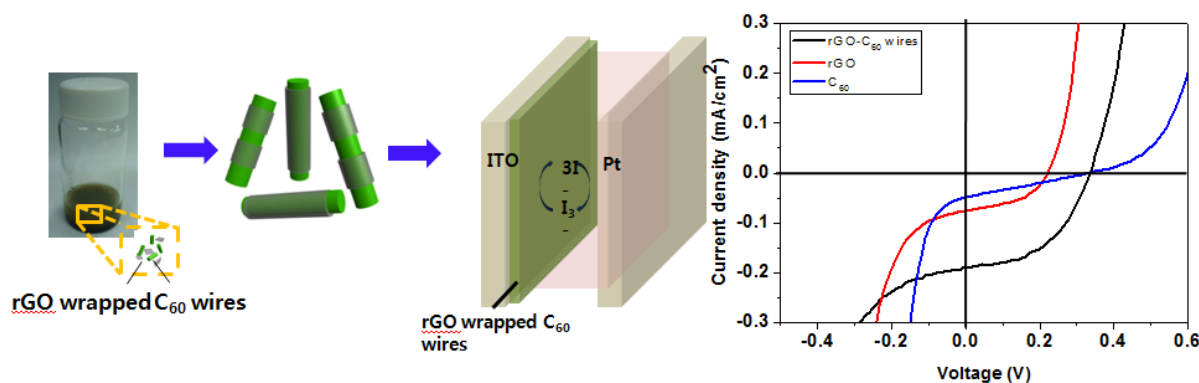


Figure 1. Photovoltaic device of rGO-wrapped fullerene wires.