

Supporting Information

Controllable Crystalline Structure of Fullerene Nanorods and Transport

Property of an Individual Nanorod

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A. The concentration of C₆₀ in stock solution has a strong effect on the length of the rods, which is the concentration of C₆₀ in inverse proportion to the logarithmic length of the rod.

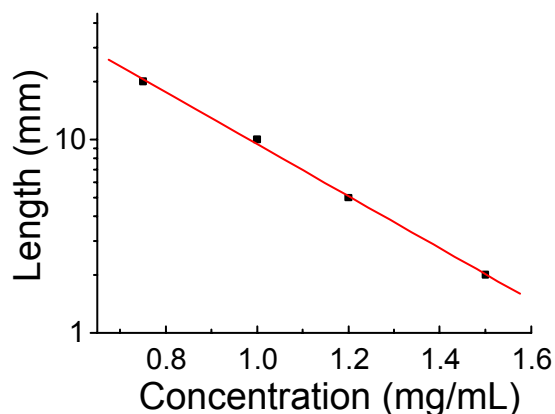


Figure S1. Concentration dependence of the average length of fcc structured pristine C₆₀ nanorod.

B. The FTIR spectrum (figure S2a) and XRD pattern (figure S2b) of C_{60} nanorod which in different crystal structures (hcp and fcc) are compared. It can be seen (figure S2a) that the m-xylene absorption peaks at 766.7 and 689.5 cm^{-1} in the FTIR spectrum of hcp structured C_{60} nanorod disappear in that of fcc structured C_{60} nanorod. XRD patterns in figure S2b conclude that the C_{60} nanorods in different crystal were obtained successfully.

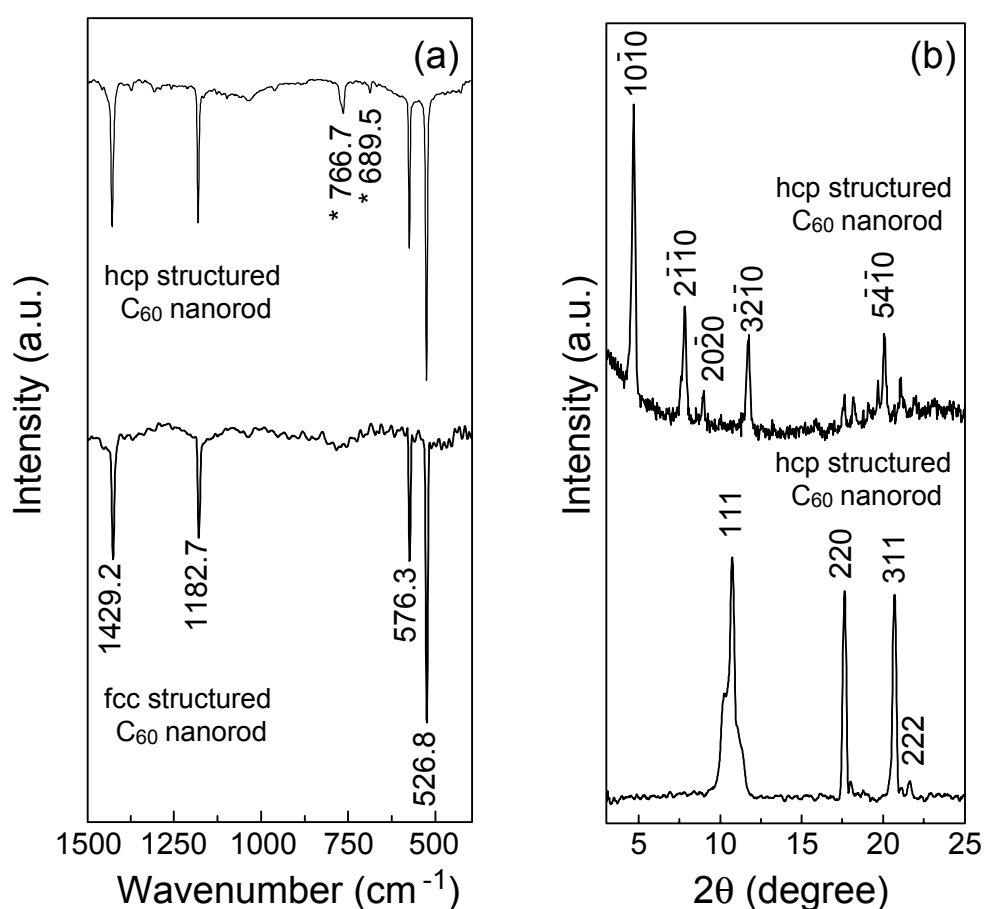


Figure S2. FTIR spectrum (a) of C_{60} nanorods in hcp (upper panel) and fcc (lower panel) structure, respectively. The asterisks indicate the solvent peaks. XRD patterns (b) obtained with C_{60} nanorods in hcp (upper panel) and fcc (lower panel) crystal structure.

C. Two types of devices were fabricated by FIB technique. Type I device (figure S3a) was constructed with the hcp structured C_{60} rod, while type II device (figure S3b) was fabricated with fcc C_{60} rod. After the FIB process, both of the two devices were not annealed before I-V measurement. The I-V curves of them were shown in figure S3c and S3d. The I-V measurement was repeated from three different devices of both types. The derived conductivities of them are 4.8×10^{-4} S/m (device type I) and 7.0×10^{-3} S/m (device type II), respectively.

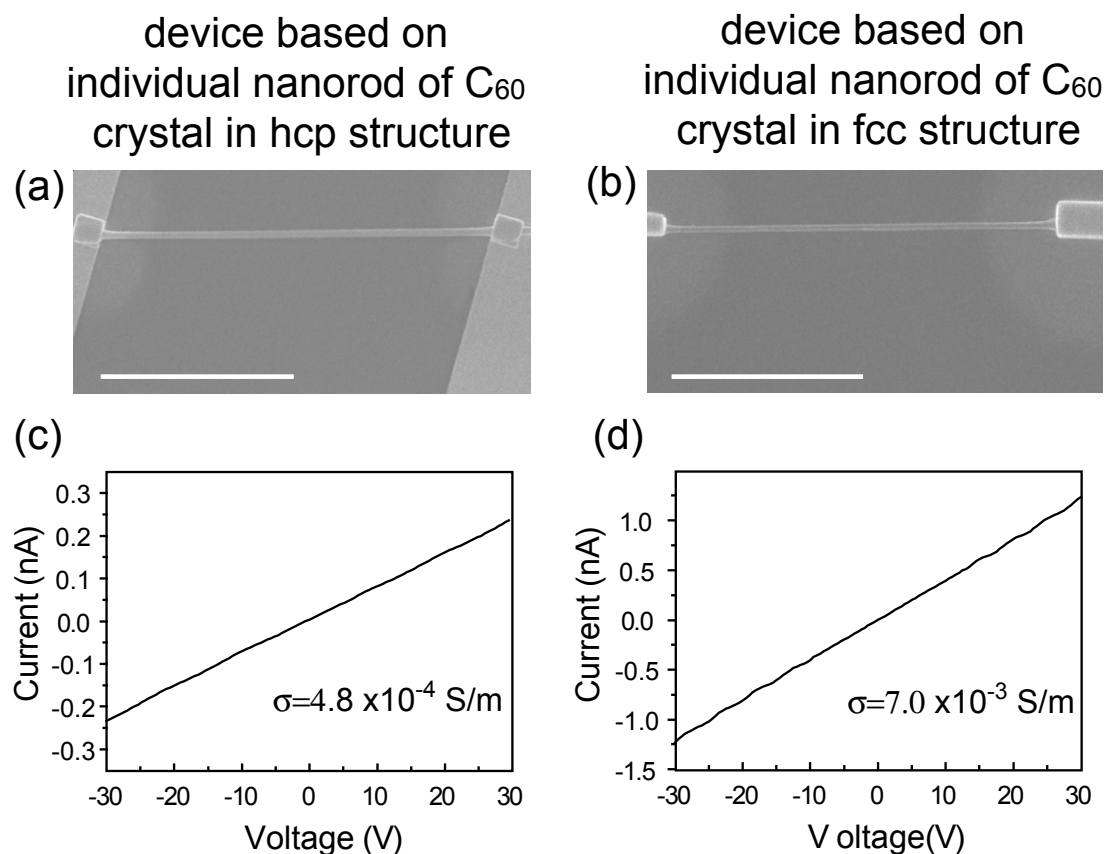


Figure S3. Typical SEM images of the individual single-crystalline C_{60} rod based devices of type I (a) and type II (b); the scale bars in them are 10 μm . I-V characteristic of individual single-crystalline C_{60} rod based devices of type I (c) and type II (d).