Supplementary Information.

1. Reproducibility of the observed effect and details of *I-V* measurements.

(a) We have measured multiple devices (~50) and have observed *I-V* splitting in ~30% of the total number of devices fabricated. **Figure S1** below shows additional data from another Au/SWCNT- Poly T DNA/Ni device. This device also shows splitting in the *I-V* characteristics as a function of magnetic field and ~ 80% spin polarization has been observed at low temperature and bias (**Figure S2**).

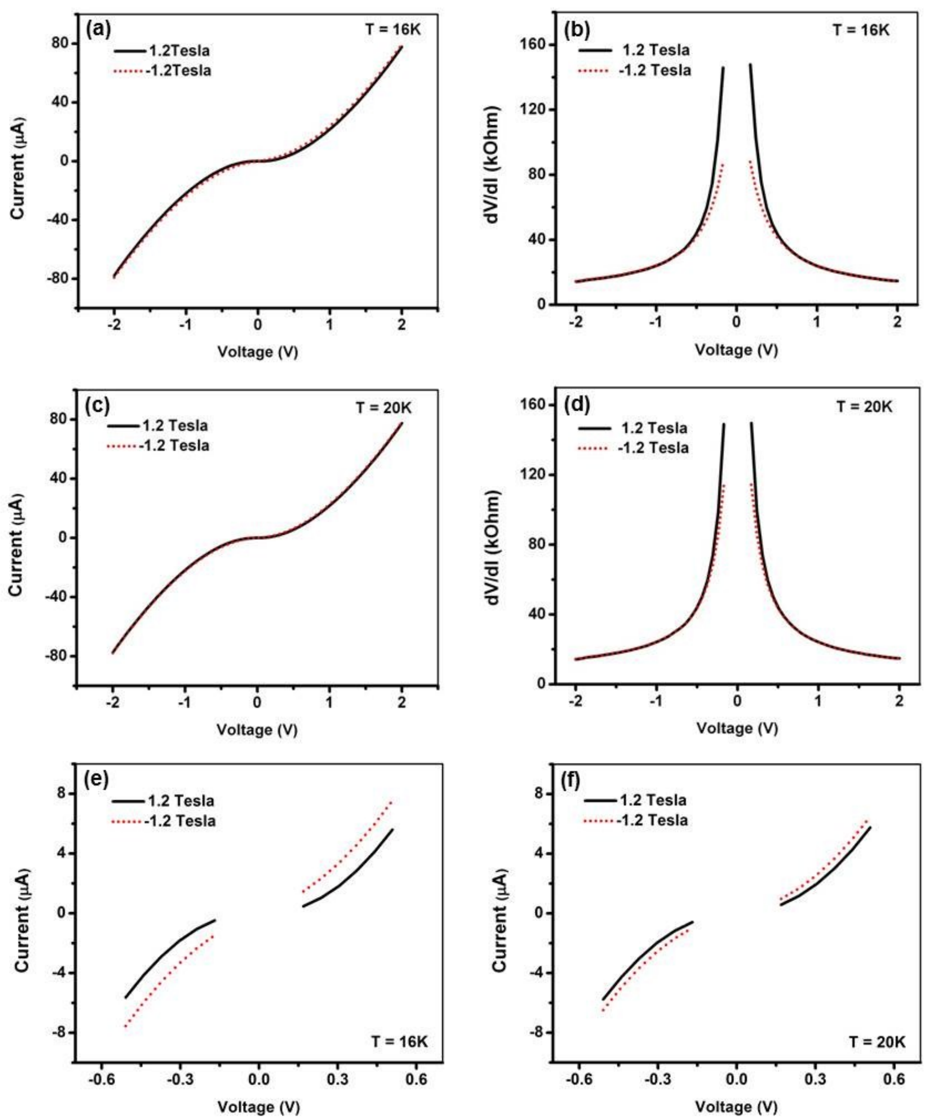

Figure S1. (a) – (d) *I-V* characteristics and d*V*/d*I* –*V* characteristics of a different Au/SWCNT-Poly T DNA/Ni device. (e), (f) *I-V* scans in low bias range. Current values are too low to be reliably measured near zero bias, and are hence omitted.

As discussed in the main paper, there is some variation in the current value from one device to another due to the variation in the number of tubes connected between the electrodes. We try to connect as few tubes as possible (ideally ~1), but in some cases higher number of tubes may be present. The device described in **Figure S1**, actually shows larger current than the device reported in the main paper (Figure 3). This is due to difference in the number of connecting tubes between the electrodes. Nevertheless, splitting in *I-V* curves has been observed and as shown in **Figure S2**, ~ 80% spin polarization has been found at low temperature and bias.

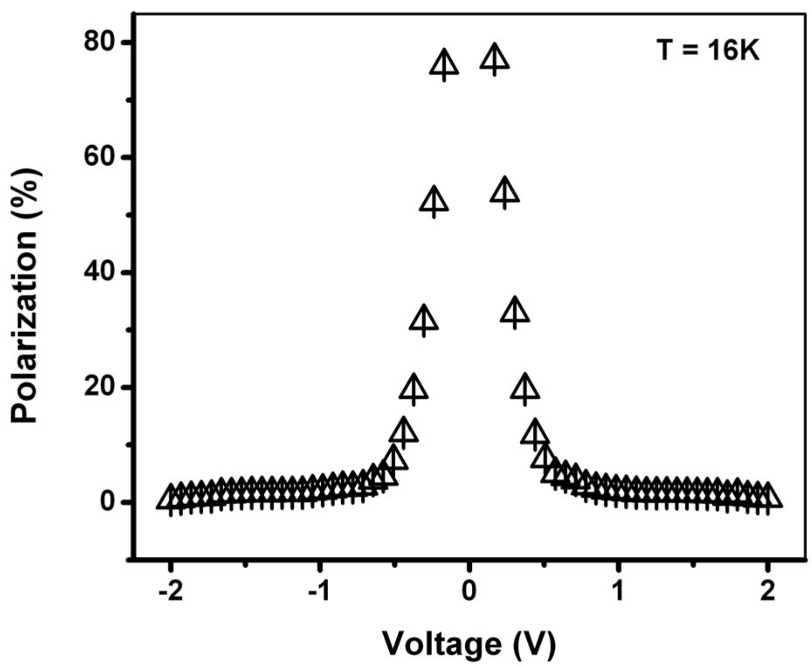

Figure S2. Spin polarization vs. bias voltage at 16K for the Au/SWCNT- Poly T DNA/Ni device described in **Figure S1**. Spin polarization of ~80% has been observed at low bias of 0.24V. Spin polarization decays relatively rapidly compared to the device reported in main paper. This could be due to presence of higher number of channels in this case, some of which may not remain spin selective at higher bias.

(b) For a given device, under given temperature and field value, *I-V* curves are highly reproducible. Comparison of the raw data between various scans show that there is ~1% variation from one scan to the next. This is shown in **Figure S3** below. This figure shows multiple scans of the *I-V* data reported in the main paper (Figure 3). The scans are overlapping each other and the variation between scans is indiscernible, even smaller than the marker size. Therefore, the observed *I-V* splitting cannot be attributed to any measurement artifact.

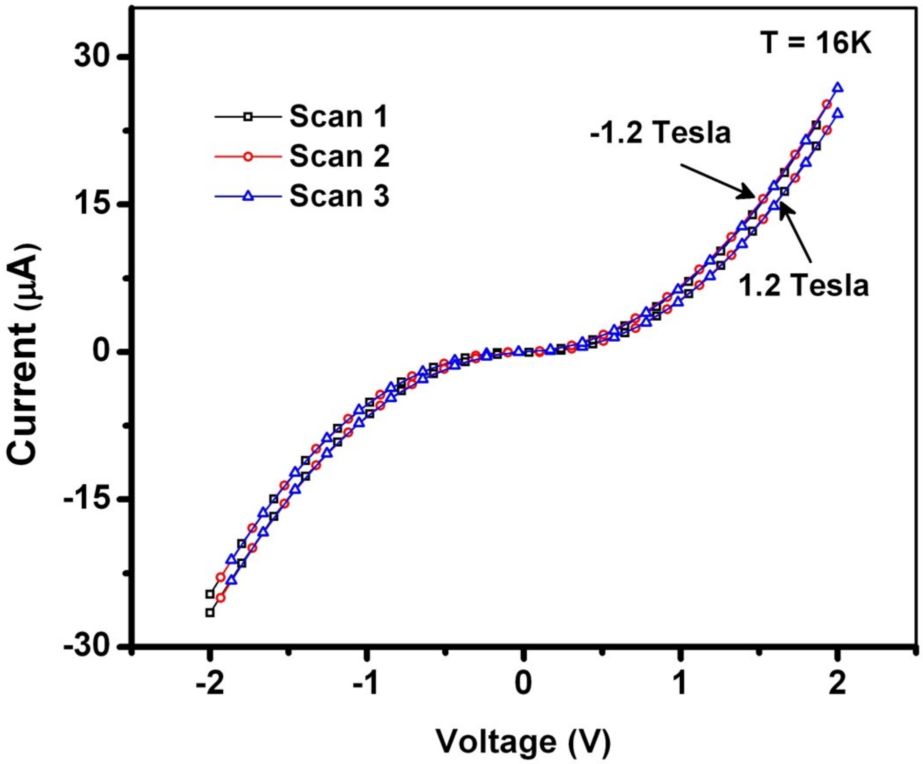

Figure S3. Multiple *I-V* scans of the Au/SWCNT- Poly T DNA/Ni device reported in main paper (Figure 3). The scans are overlapping each other, with ~1% difference between consecutive scans, which is smaller than the marker size used in this Figure. Thus the observed splitting cannot be attributed to any measurement artifact.

(c) **Figure S4** below shows the current-voltage characteristics of the device reported in Figure 3 (main paper) in small voltage range of (-0.5V – +0.5V). The difference in current for two magnetic field directions can be clearly seen. The slopes of the *I-V* curves are different at low bias values (implying difference in resistance) and the curves gradually become parallel as bias voltage is increased (implying gradually vanishing resistance differential). This is consistent with the d*V*/d*I* vs *V* curves in Figures 3(b), (d), (f), (h).

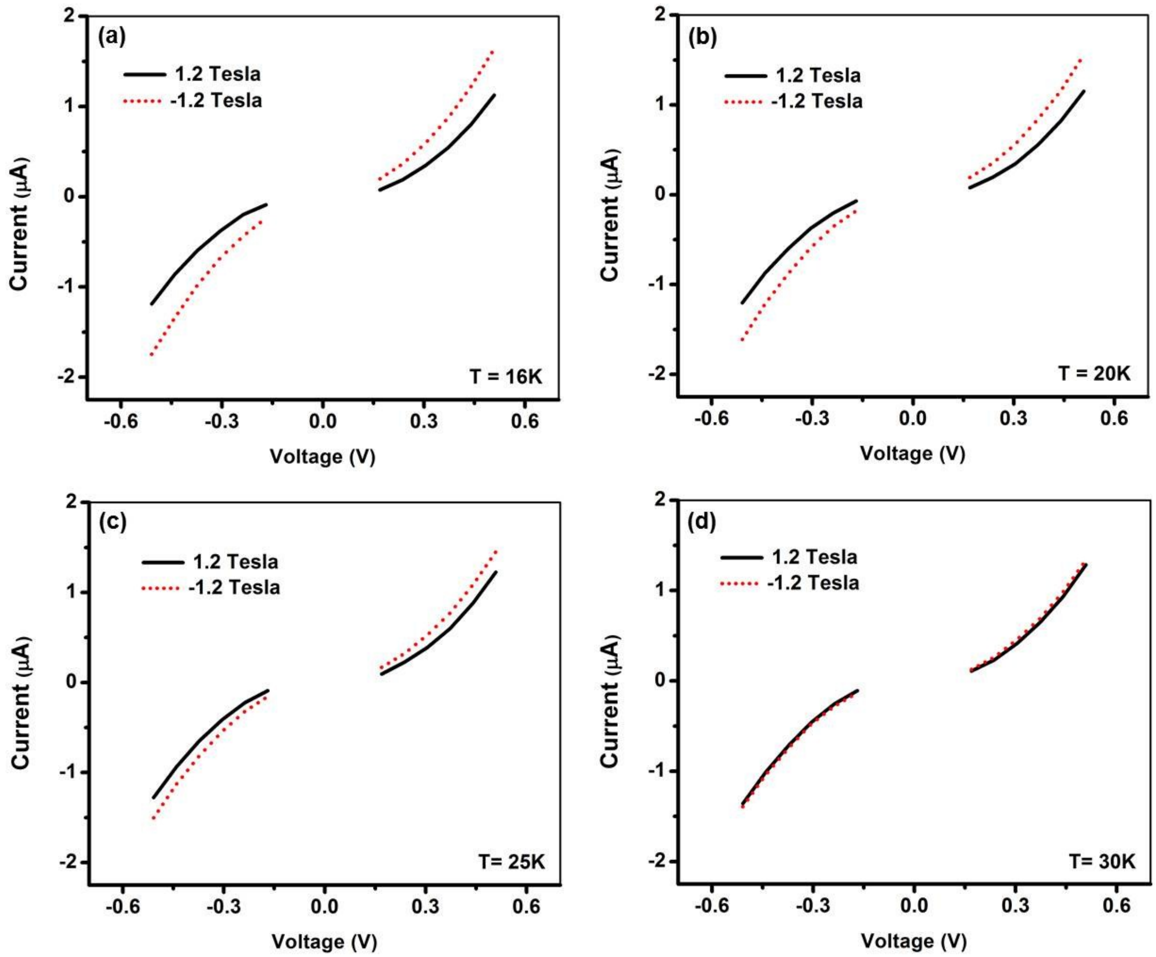

Figure S4. Current-voltage characteristics of the reported device (Figure 3, main paper) in small voltage range of (-0.5V – +0.5V). Current values are too low to be reliably measured near zero bias, and are hence omitted.

In **Figure S4**, we omit the region very close to zero bias, since in this range current is too small to be reliably measured by our experimental setup, as already mentioned in the main paper. This is also consistent with our d*V*/d*I* vs *V* curves in Figure 3 (main paper).

(d) The transport measurements are four-terminal to avoid the resistances of the metallic contacts. We have also performed two-terminal measurements on these devices. The contact resistances (of Ni and Au) extracted from this data are shown in **Figure S5**. The contact resistances are 2–3 orders of magnitude smaller than the resistance of the actual devices reported in the paper.

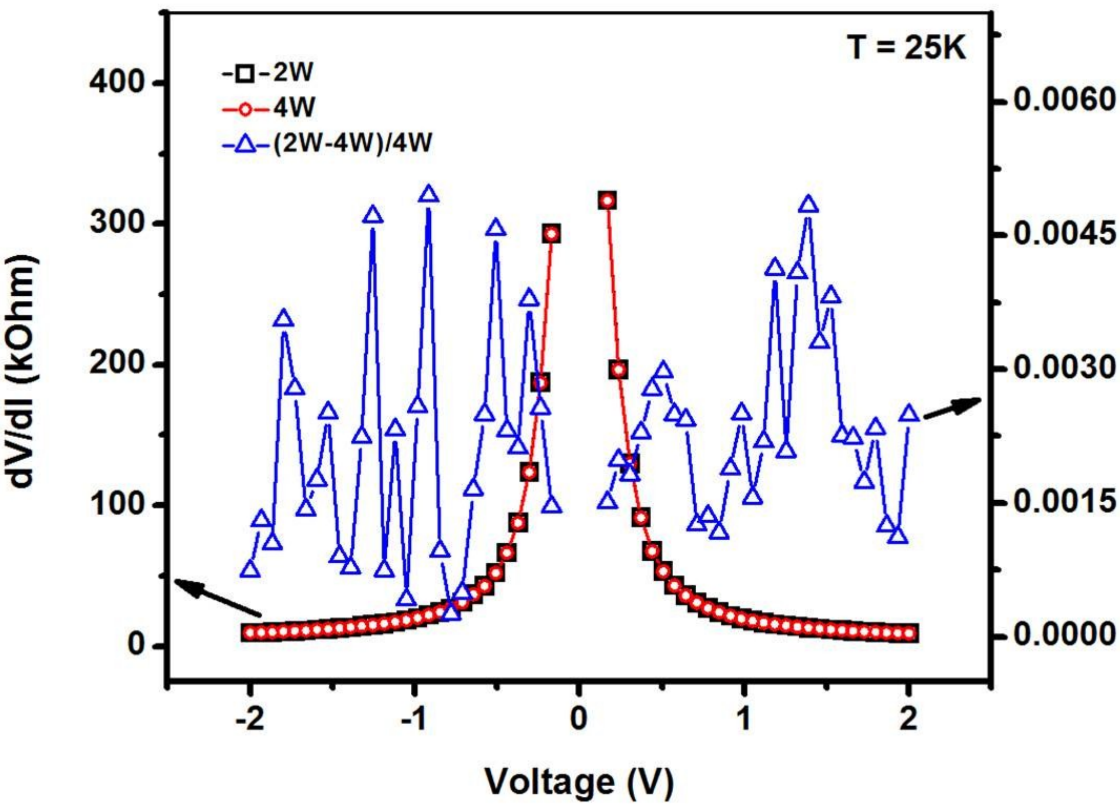

Figure S5. Two-wire (2W) and four-wire (4W) measurements and contact resistance normalized relative to four-wire resistance ((2W-4W)/4W). Contact resistance is 2–3 orders of magnitude smaller than the four-wire resistance.