Supporting Information

Design Giant Magneto Resistance Device with High Spin Filter Efficiency

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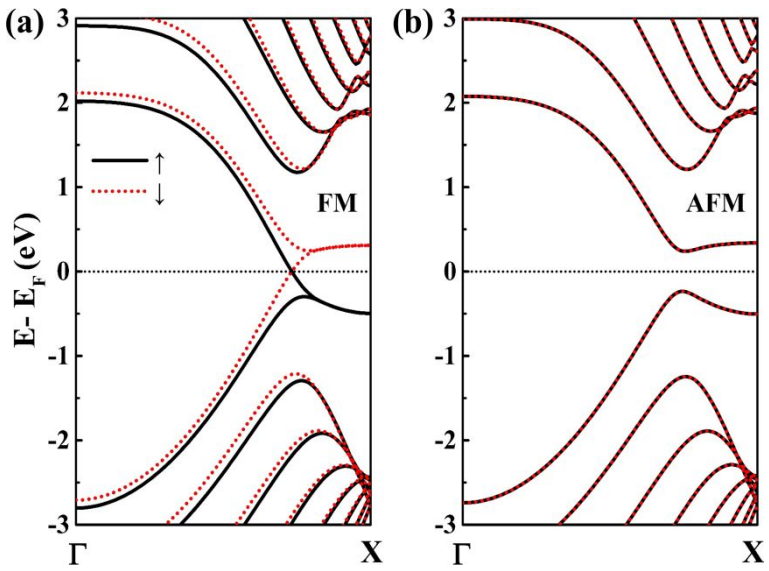

Figure S1. The band structures of ZGNR (a) The FM coupling (b) The AFM coupling.

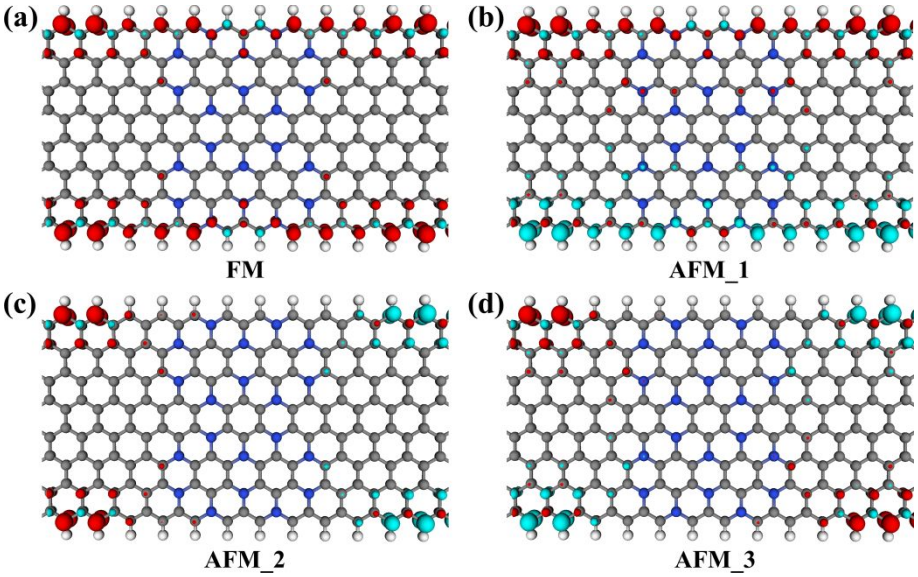

Figure S2. The spin density of four magnetic configurations in the C_3N junction (a) The FM coupling (b)-(d) The three AFM coupling cases.

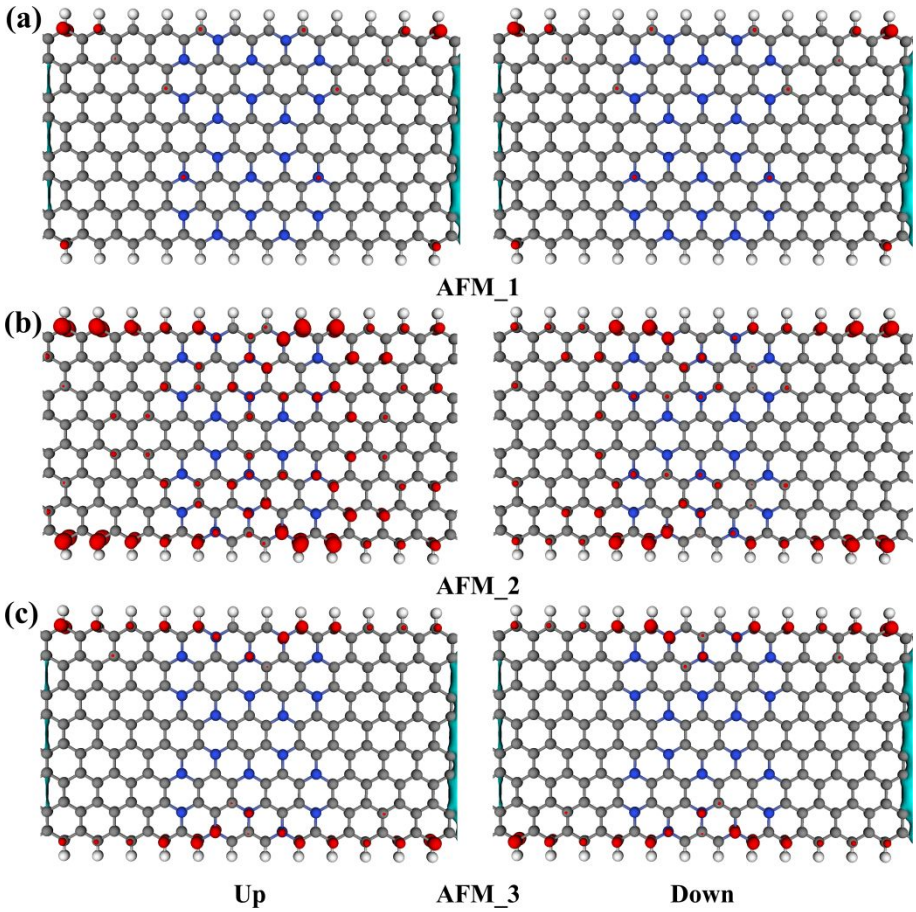

Figure S3. The spin-resolved LDOS in the C_3N junction at the Fermi level (a)-(c) The three AFM coupling cases.

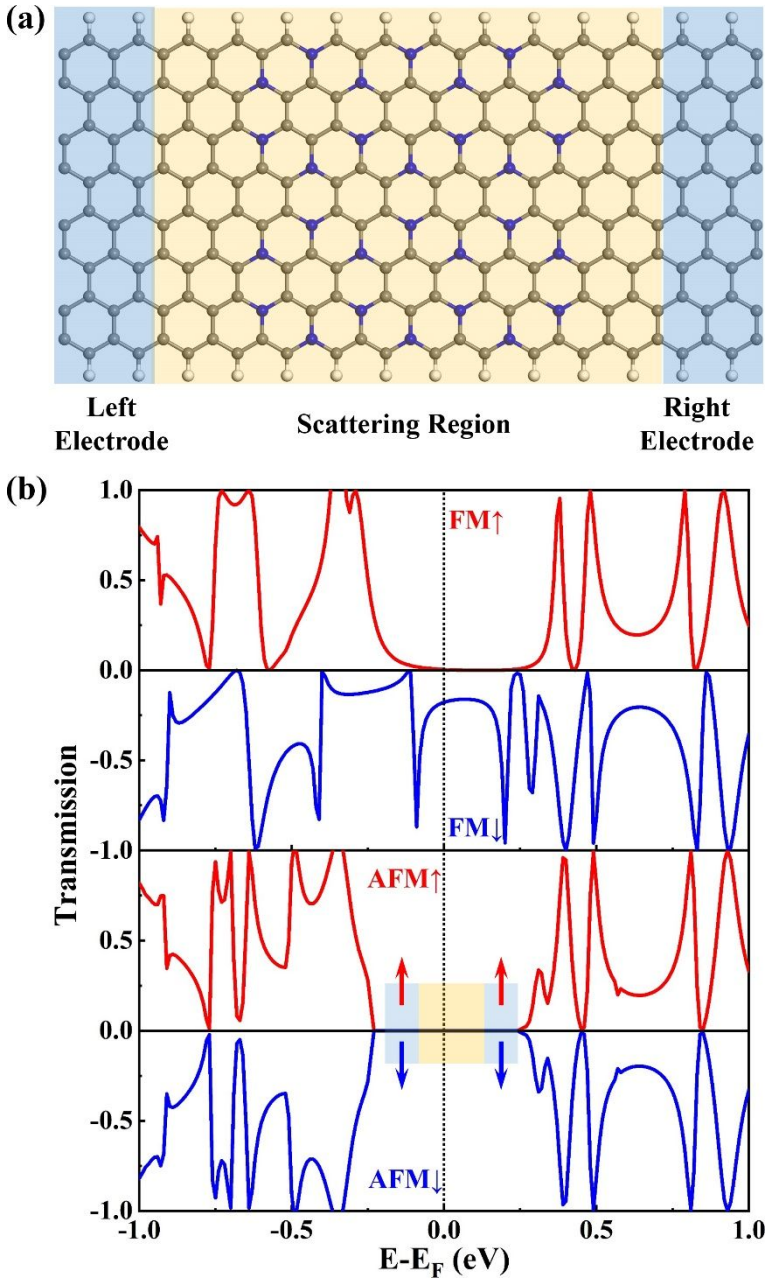

Figure S4. The spin-resolved transmission spectra of longer C_3N junction with ferromagnetic (FM) coupling and AFM coupling of two electrodes. The red and blue marked lines stand for the current of spin-up and spin-down electrons, respectively.

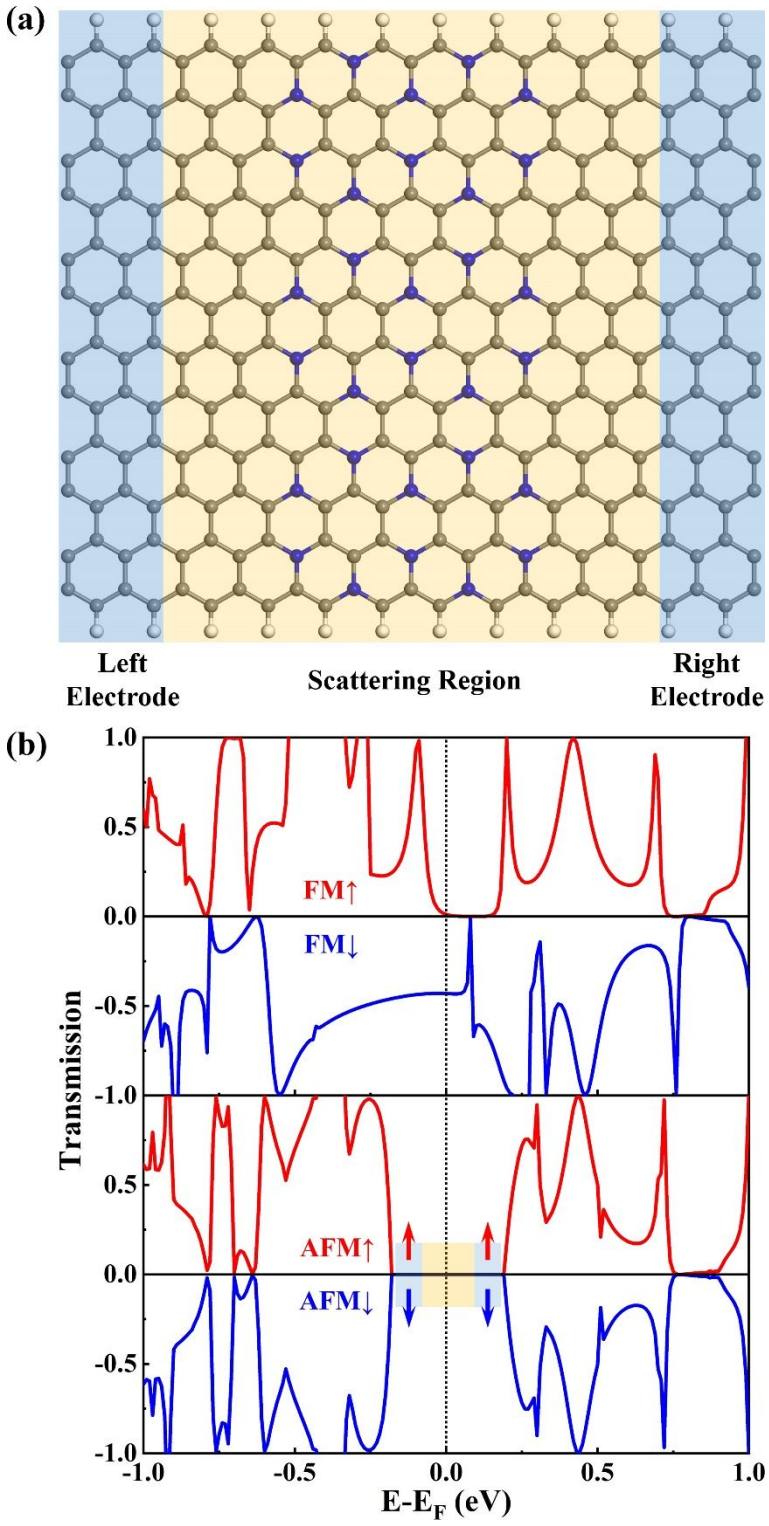

Figure S5. The spin-resolved transmission spectra of larger width C_3N (12-ZGNR) junction with ferromagnetic (FM) coupling and AFM coupling of two electrodes. The red and blue marked lines stand for the current of spin-up and spin-down electrons, respectively.

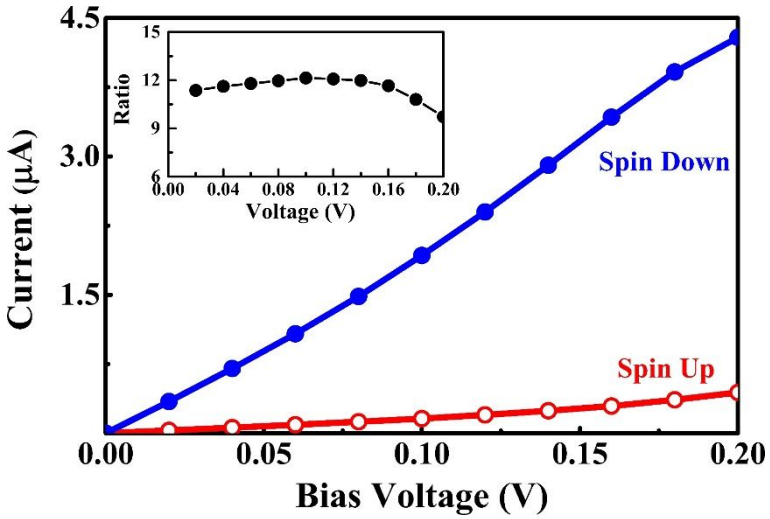

Figure S6. The spin-resolved I-V curves of the second type C_3N junction with ferromagnetic (FM) coupling of two electrodes. The red and blue marked lines stand for the current of spin-up and spin-down electrons, respectively. The inset denotes the rectification ratio of the two spin current under bias voltage.