Supporting Information

Room-Temperature Spin-Valve Effect in Fe₃GaTe₂/MoS₂/Fe₃GaTe₂ 2D van der Waals Heterojunction Devices

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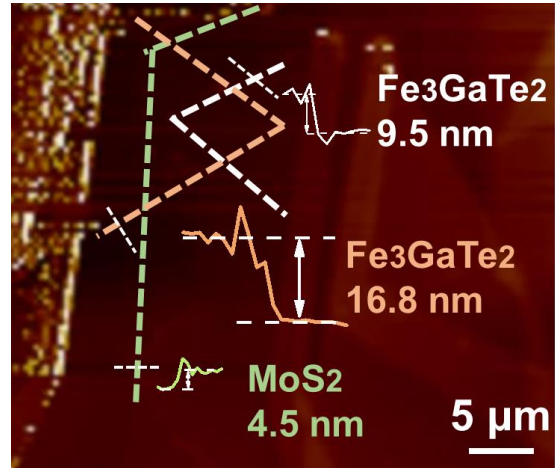
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Figure S1. AFM topography with height profile of the $Fe_3GaTe_2/MoS_2/Fe_3GaTe_2$ heterojunction spin valve device. The regions marked by the white, green and orange line represent the top Fe_3GaTe_2, MoS_2, and bottom Fe_3GaTe_2 layer, respectively, indicating the thicknesses are 9.5 nm, 4.5 nm and 16.8 nm respectively.

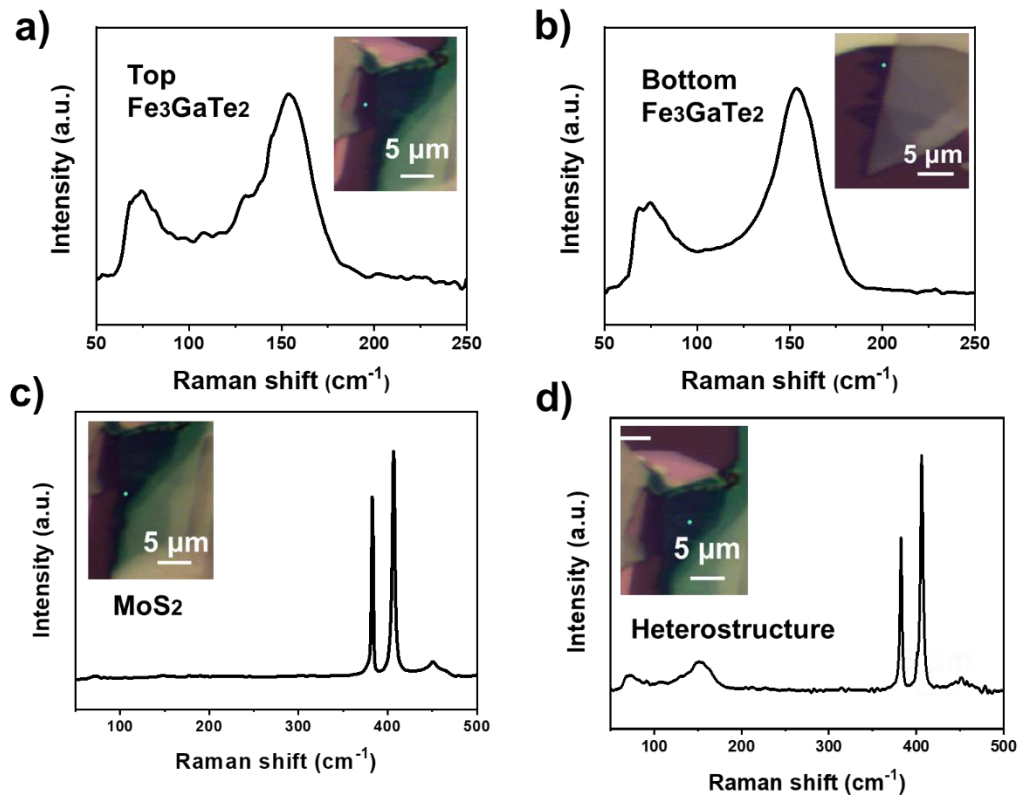**Figure S2.** a) Raman spectra of the top Fe_3GaTe_2 of the heterojunction. b) Raman spectra of the bottom Fe_3GaTe_2 of the heterojunction. c) Raman spectra of the middle MoS_2 layer of the heterojunction. d) Raman spectra of the whole heterojunction.
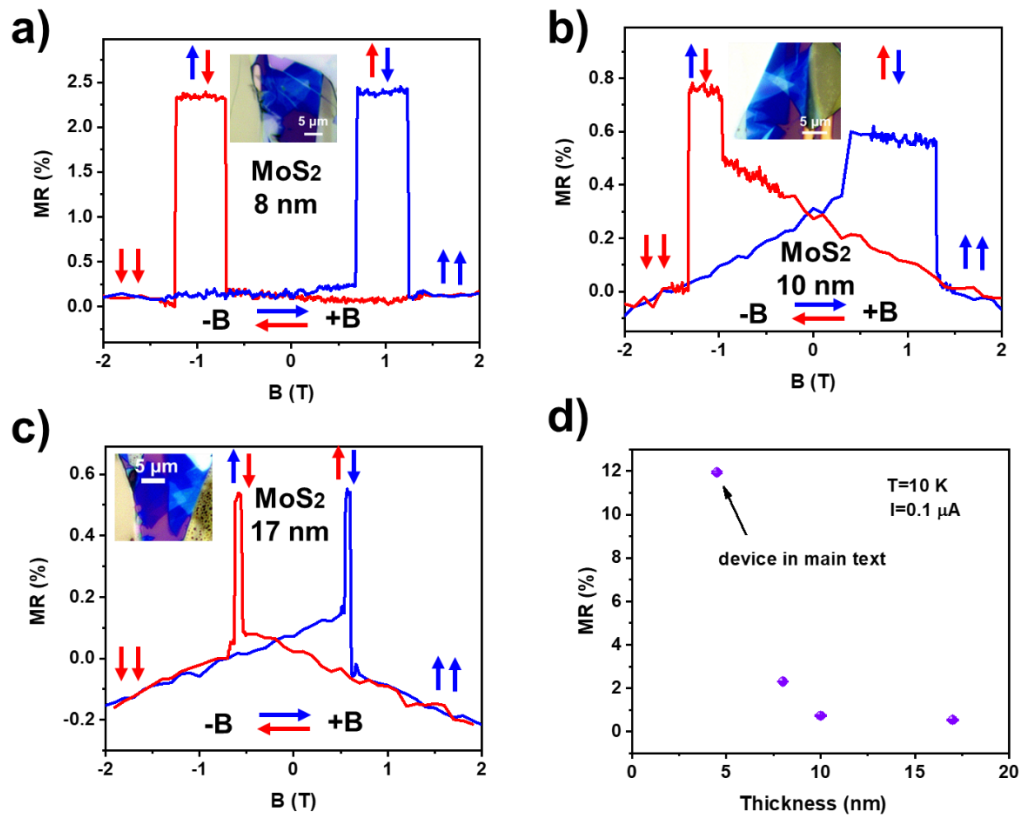
Figure S3. MR signals and optical images (inset) of $Fe_3GaTe_2/MoS_2/Fe_3GaTe_2$ with different thicknesses of MoS_2 spacer layers, the thicknesses are 8 (a), 10 (b) and 17 nm, respectively. (d) The MR signal as a function of the MoS_2 thickness.