Supplementary Information of

Room-temperature spin-valve devices without spacer layers based on Fe_3GaTe_2 van der Waals homojunctions

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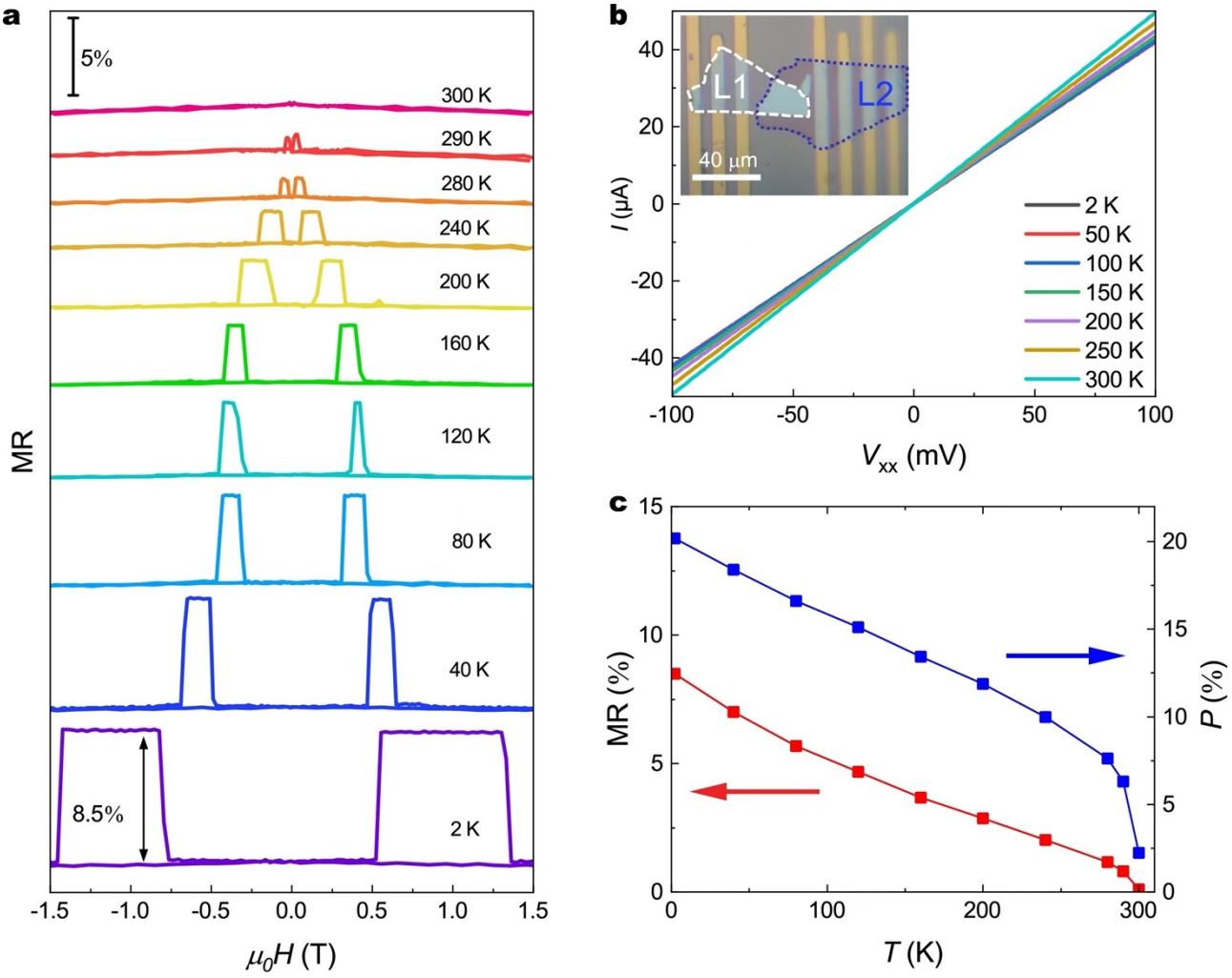

Figure S1 (a) MR as functions of H at various temperatures ranging from 2 - 300 K (device S2). Obvious two-state MR behaviors are observed. (b) I-V_{xx} characteristic curves at various temperatures, with the linear behavior indicating a favorable Ohmic contact of the device. The inset is an optical image of the Fe_3GaTe_2/Fe_3GaTe_2 device. (c) Temperature-dependent MR and spin polarization P, both of which exhibit a decrease with rising temperature.

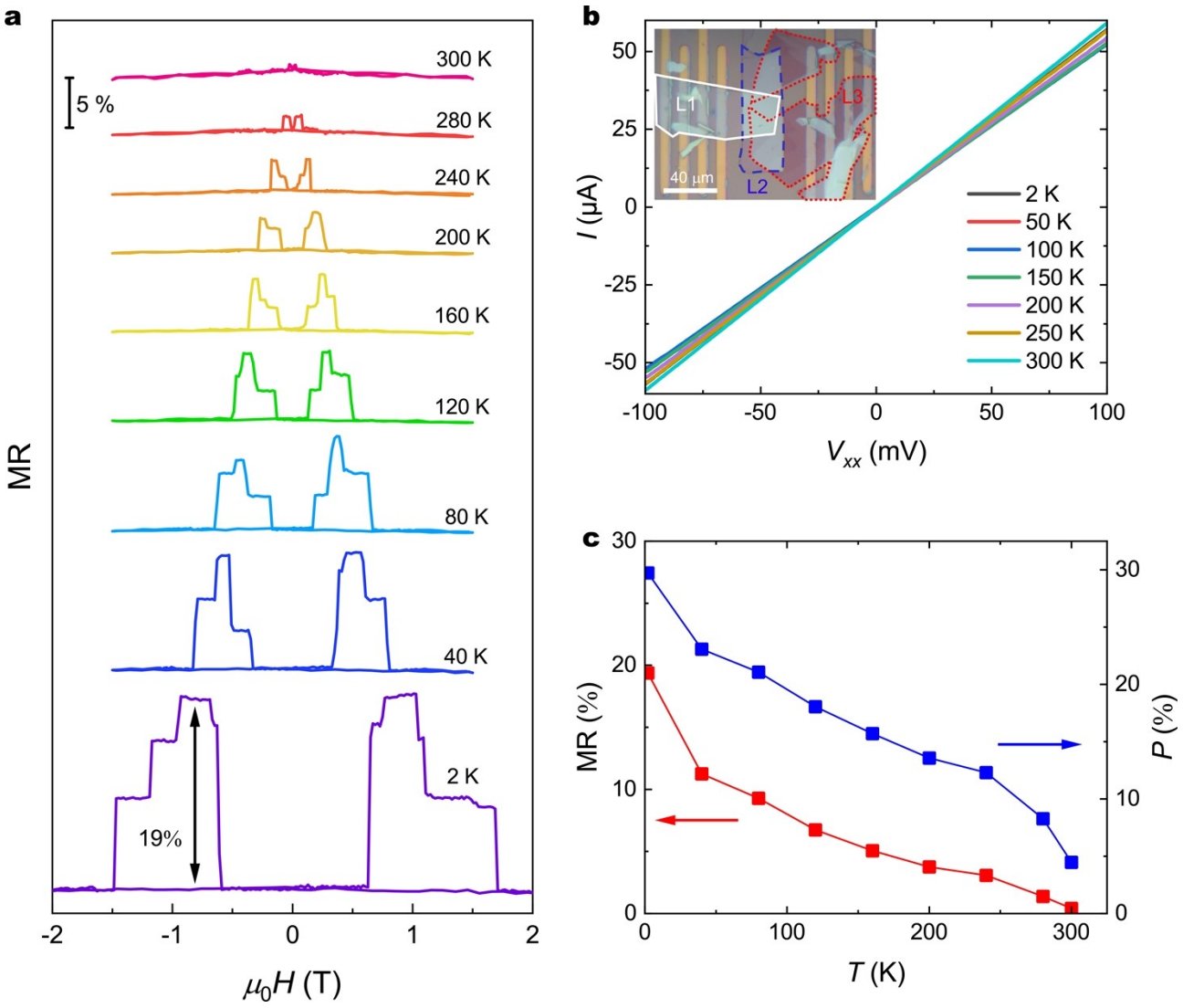

Figure S2 (a) MR as functions of H at various temperatures ranging from 2 - 300 K (device S3). Obvious two-state MR behaviors are observed. (b) I-V_{xx} characteristic curves at various temperatures, with the linear behavior indicating a favorable Ohmic contact of the device. The inset is an optical image of the $Fe_3GaTe_2/Fe_3GaTe_2/Fe_3GaTe_2$ device with the L3 flake splitting into two parts. (c) Temperature-dependent MR and spin polarization P, both of which exhibit a decrease with rising temperature.