Supporting information

Displacement damage effects in MoS_2-based electronics

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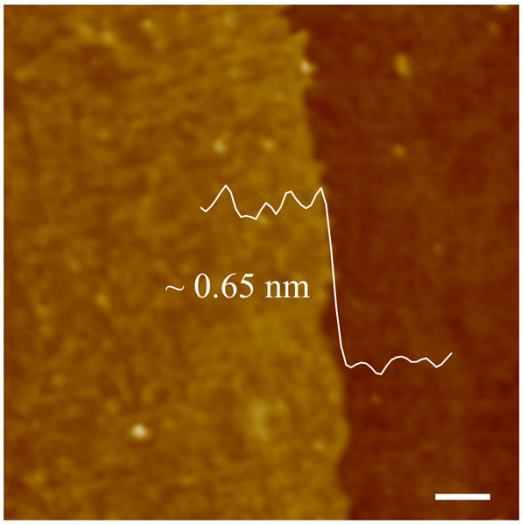

Fig. S1. (Color online) AFM image of the transferred monolayer MoS_2 domains on SiO_2/Si substrate. Scale bar, 100 nm.

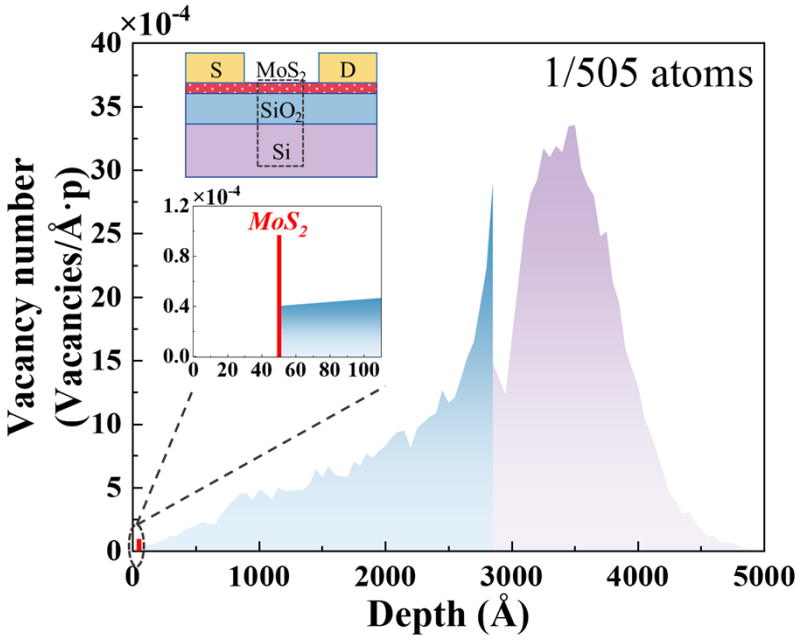

Fig. S2. (Color online) Simulation results of the vacancy number in the channel region (MoS_2/SiO_2/Si) by SRIM. Inset illustrates the simulation region.

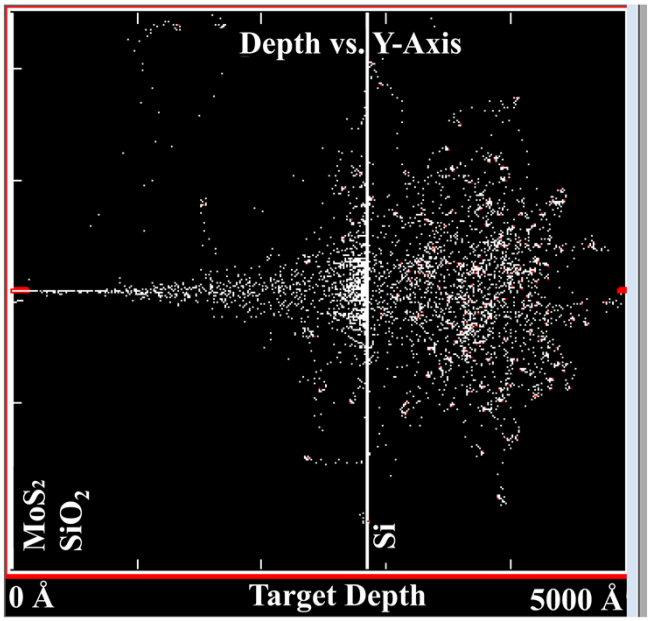

Fig. S3. (Color online) Track distribution of 30 keV electrons in monolayer MoS_2 with a SiO_2/Si substrate.

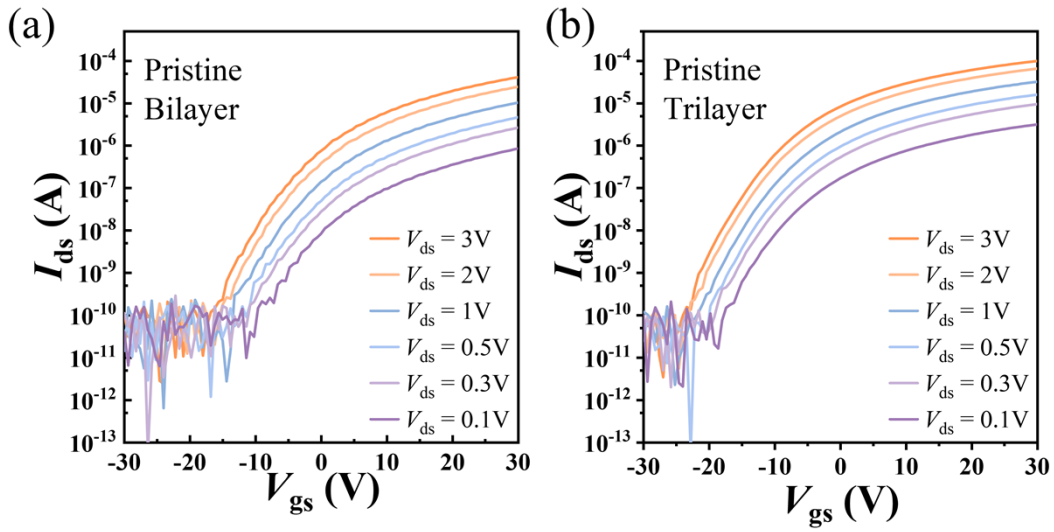

Fig. S4. (Color online) The transfer characteristics of pristine (a) bilayer, and (b) trilayer MoS_2 FETs obtained by the mechanical exfoliation method, respectively.

Table S1. *NIEL* in different material from SRIM/TRIM.

Incident Ion	Channel Material	Thickness (nm)	*NIEL* (MeV·cm^2/g)	Reference
30 keV proton	MoS_2	0.65	0.156	This work
150 keV proton	MoS_2	0.75	0.00403	[41]
2 MeV proton	MoS_2	0.62	0.322	[21]
10 MeV proton	MoS_2	8.5	0.0828	[20]
150 keV proton	CNT	1.5	1.506	[11]
5 MeV proton	SnO	12	0.434	[38]
5 MeV proton	IGTO	27	2.43	[37]
3 MeV proton	SiC	53000	270	[35]
5 MeV proton	ZnO	10	0.514	[39]
1.8 GeV Ta	Graphene	0.34	581	[36]