Supporting Information for

Anomalous Raman scattering and lattice dynamics in

mono- and few-layer WTe$_2$

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Optical microscopy and AFM images of 5- to 13-layer WTe$_2$
Fig. S1. (a, c) The optical microscopy images of WTe$_2$ flakes containing “5, 6, and 8 layers” and “13 layers”, respectively; (b, d) the AFM images of the WTe$_2$ flakes measured along the green solid lines in (a, c).

**Phonon spectra of bulk and mono- to tri-layer WTe$_2$**
Fig. S2. Simulated Phonon spectra of (a) bulk, (b) tri-layer, (c), bi-layer, and (d) mono-layer WTe$_2$. Blue dashed lines indicate lattice vibrational frequencies corresponding to Raman modes of bulk WTe$_2$ in experiments.

**Temporal degradation of trilayer WTe$_2$**
**Fig. S3.** (a) The optical microscopy images of trilayer WTe$_2$ obtained at sequential stages after its fresh deposition on Si/SiO$_2$ substrate. (b) The Raman spectra of trilayer WTe$_2$ measured on the center of degraded regions at the same sequential stages as in (a).