***Supplementary Materials for***

**“ Intrinsic Photoconductivity of few-layered ZrS2 Phototransistors via Multiterminal Measurements”**

**Figure S1: AFM image and height trace of one of the exfoliated flakes of ZrS2 on to Si/SiO2 substrate.**



AFM height measurements were performed on several exfoliated crystals of ZrS2 on Si/SiO2 substrate using Veeco Dimension 3100 AFM setup. The flakes used for optical measurements are from 8 nm to 15 nm thick.

**Figure S2**. **Photocurrent vs incident optical power**

 The photocurrent as a function of incident optical power under several bias voltages for (a) two-terminal configuration (b) four-terminal configuration (Iph2W and Iph4W denote the photocurrent with two and four-terminal configurations, respectively). The four-terminal photocurrent is significantly larger (>1000 %) than the two-terminal current. Under both configurations, the photocurrent increases with the bias voltage.