

## Supplementary information:

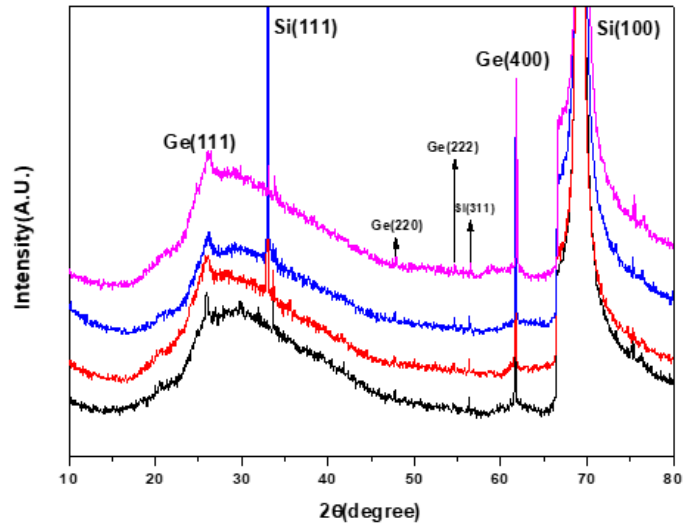


Figure 2. The XRD of DC sputter deposited Ge films

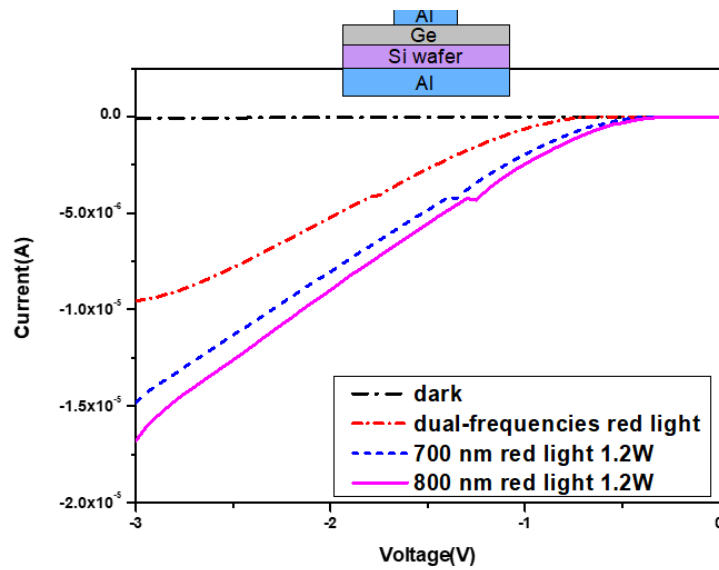


Figure 2. The I-V characteristics of Ge/Si junction under various illuminations