



Figure S1. XPS peaks for (a) Zn 2p (L6-10), (b) Cu 2p (L31-35), and (c) In 3d (L31-35) core levels from the bulk $\text{Zn}_{0.8}\text{Mg}_{0.2}\text{O}$ region and bulk CIGS region. No change of peak positions and their FWHM values indicates that there is no sample damage during sputter etching.