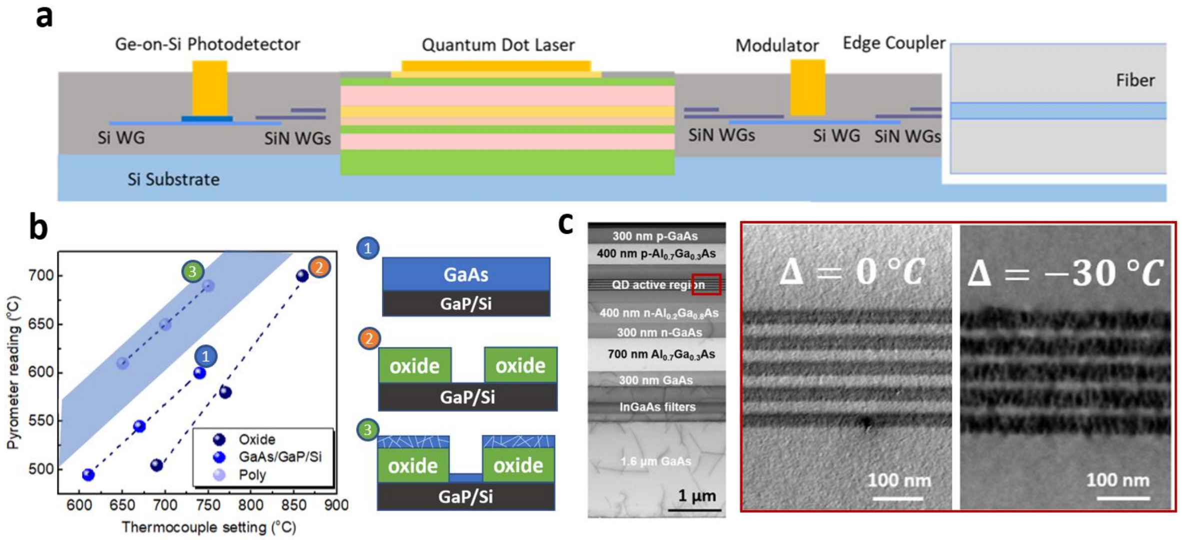

Figure 1: (a) Simplified schematic diagram of the heteroepitaxial laser integration on Si platform. (b) Pyrometer reading discrepancy between different surfaces. The shaded area indicates the range of reading with respect to the thickness of the polycrystal, with the temperature reading increases as the polycrystal thickness increase at the same thermocouple setting. The fitted dashed line for profile 3 is obtained right before depositing the InAs dots. (c) Cross-section TEM of the full epi stack obtained in pockets after temperature tunning with InAs QD nucleation observed after 30 °C decrease.

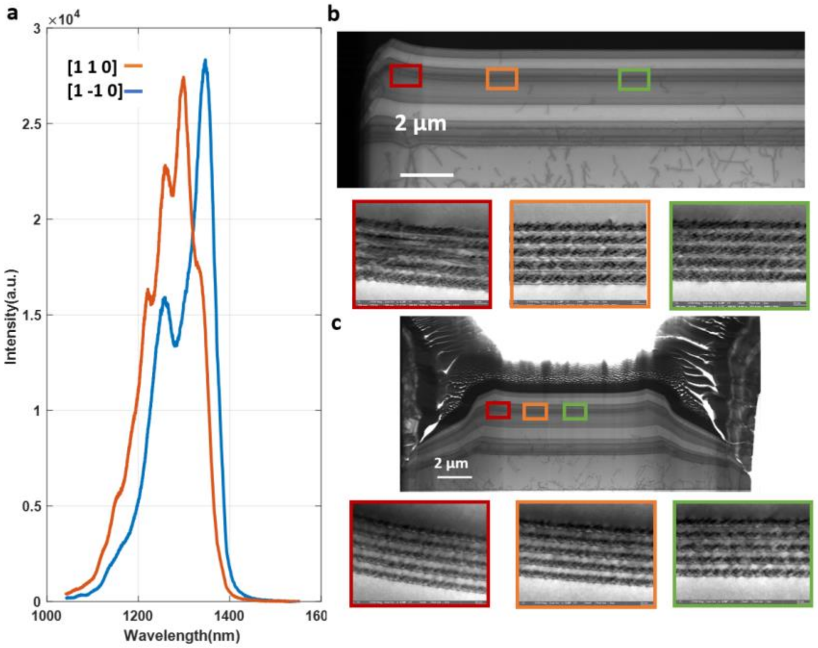

Figure 2: (a) Room temperature photoluminescent obtained from pockets aligned in orthogonal crystal orientations. Cross-section TEM from materials grown in pockets aligned to the (b) [1 1 0] direction and the (c) [1 -1 0] direction. It could be observed that the layers close to the edge of the [1 1 0] oriented pocket are less uniform, possibly the reason for less well-defined photoluminescent.