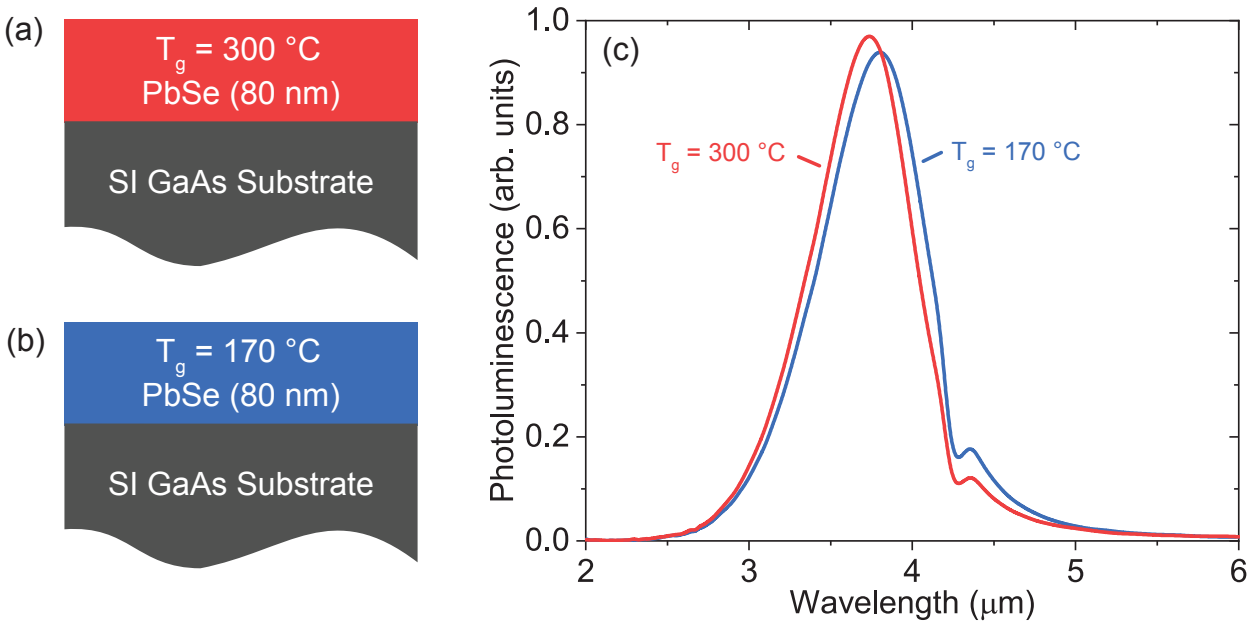

Figure 1: (a) Sample layer stack for the PbSe film grown at 300 °C. (b) Sample layer stack for the PbSe film grown at 170 °C. (c) Measured room temperature MIR photoluminescence (PL) from the 300 °C and 170 °C sample. The film grown at 300 °C has a slightly bluer PL peak due to the residual strain energy accumulated when cooling down from growth temperature (300 °C) to room temperature (~26 °C). Notably, photoluminescence intensity is nearly identical for both samples.

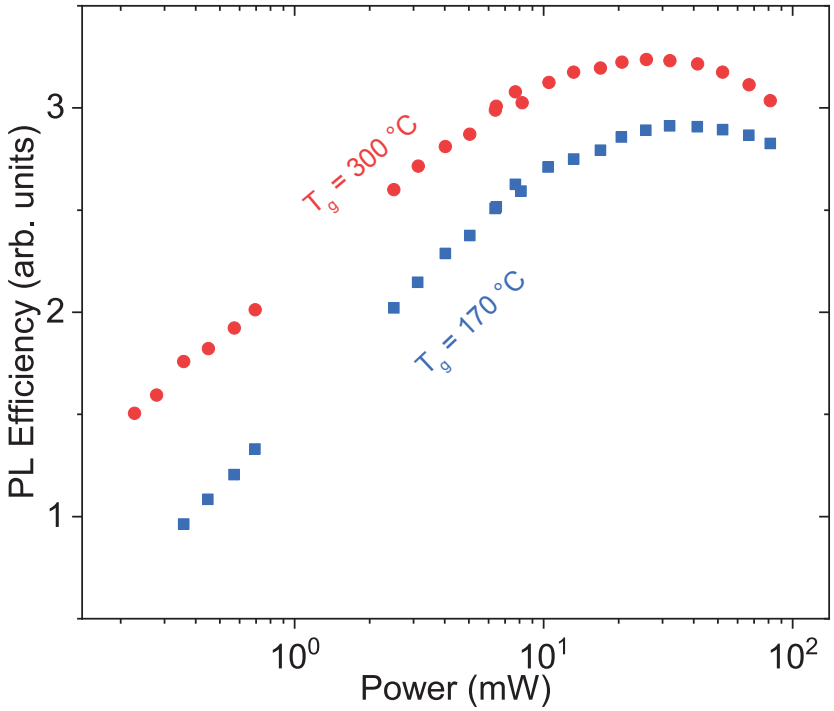

Figure 2: Photoluminescence efficiency (integrated PL divided by pump power) versus pump power of both the 300 °C growth temperature PbSe film and the 170 °C growth temperature PbSe film. Peak PL efficiency occurs around the sample input power for both samples, suggesting that SRH recombination does not dramatically reduce PL efficiency for the 170 °C growth sample. We do not see a constant PL efficiency, suggesting that we have not entered a low-injection regime.