



Initial characterization of strained superlattice InAlGaAs/AlGaAs photocathode structures grown pseudomorphically on GaAs(001)

a) X-ray diffraction measurements around the GaAs(004) peak for the same photocathode structure at three different growth temperatures. The sample grown at 520 °C likely had a poorly calibrated temperature, resulting in some phase segregation and the splitting of the -1 peak. The other films show good superlattice ordering.

b) The same measurement comparing a photocathode grown with analog AlGaAs barriers and digital alloy AlGaAs barriers. The overall superlattice structure is preserved in the digital alloy scheme.

c) Quantum efficiency and spin polarization measured in a photocathode fabricated from the sample grown at 520 °C with phase segregation. Despite this, the peak figure of merit measured is only slightly worse than the state-of-the-art