

Improved Semiconductor Sensor Structures With Reduced Dislocation
Defect Densities and Related Methods For The Same

ABSTRACT

Non-silicon based semiconductor devices are integrated into silicon fabrication processes by using aspect-ratio-trapping materials. Non-silicon light-sensing devices in at least a portion of a crystalline material can output electrons generated by light absorption therein. Exemplary light-sensing devices can have relatively large micron dimensions. As an exemplary application, complementary-metal-oxide-semiconductor photodetectors are formed on a silicon substrate by incorporating an aspect-ratio-trapping technique.

Figure 1a