

ABSTRACT OF THE DISCLOSURE**DUAL BAND INFRARED DETECTOR USING STEP
MULTIQUANTUM WELLS WITH SUPERLATTICE BARRIERS**

An infrared detector uses step quantum wells with superlattice barriers for dual-band detection. The step quantum wells are designed to have two bound states and a continuum above the superlattice barriers. The bound-to-bound and bound-to-continuum transitions are employed for the dual-band detection. The superlattice barriers are used to extract the photocurrent from the bound-to-bound transition with a relatively low external electric field while suppressing the thermionic emission, resulting in a smaller dark current. The photocurrent is tuneable by adjusting the energy level in the step well relative to the miniband by an external bias. Stark shifts of the energy levels in the quantum well allow for discrimination of the photocurrents due to BM and BC transitions.

Figure 1a is to be published.