

Abstract Submitted
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Three novel effects in nanostructures GAGIK SHMAVONYAN, State Engineering University of Armenia — To achieve the broadband characteristics, a sequence of non-identical multiple quantum well (MQWs) were designed. When designing a broadband semiconductor optical amplifier (SOA) using a non-identical MQW structure, factors such as QW transition energy, number and sequence of different QWs, the thickness of the separate confinement heterostructure (SCH) layer, the selection of the dominant carrier, the ability of the QW to trap the 2D carrier, the uniformity of the 2D carrier within the QWs, etc. must be taken into account. For SOAs fabricated on the substrate with five 6 nm InGaAsP quantum wells and two 150 nm InGaAsP quantum wells, a very broad emission spectrum is obtained. The spectral width is 400 nm, covering range from 1250 to 1650 nm. The broadest bandwidth for SOA (~ 400 nm) allows us to observe three novel effects:

1. Bi-directional guided effect of lasing mode in a bending waveguide of SOA.
2. An optical switching effect in one SOA
3. The SCH layer thickness effect.

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