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Extremely Broadband Semiconductor Optical Amplifiers GAGIK SHMAVONYAN, State Engineering University of Armenia, NATIONAL TAIWAN UNIVERSITY COLLABORATION — Extremely broadband InGaAsP/InP ridge bent-waveguide semiconductor optical amplifiers with seven non-identical multiple quantum wells were designed and fabricated on InP substrate. The emission spectra of bent-waveguide semiconductor optical amplifiers at different injection current levels were experimentally studied. To achieve the broadband characteristics, a sequence of non-identical multiple quantum wells were designed. When designing a broadband semiconductor optical amplifier 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 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. Using appropriate non-identical MQW structure of SOA allows us to achieve broad emission of semiconductor optical amplifiers. The bandwidth of these semiconductor optical amplifiers is 400 nm, which cover from 1250 to 1650 nm, the range for low-loss window of optical fibers.

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