

European Semiconductor Laser Workshop 2010 September 24 - 25, 2010 Pavia, Italy

Semiconductor lasers - the first decade

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Laser world was born on 16 May 1960, when Theodore Maiman demonstrated the first ruby laser. Next big event in this world was the creation of a semiconductor laser. In autumn 1962 four groups nearly simultaneously made first semiconductor diode lasers, but they operated only pulsed at liquid-nitrogen temperature [1]. Immediately after creation of p-n junction lasers the concept of double heterostructure laser was formulated independently by Zh. Alferov and R. Kazarinov at Ioffe Insitute [2] and by H. Kroemer [3]. They proposed the possibility of significant improvement of the injection lasers in March 1963. However, success in this direction came only in autumn 1967, when for the first time the unique injection properties of wide-gap emitters were experimentally proved: the superinjection effect was demonstrated in nAlGaAs-p GaAs heterojunction [4]. In late 1968 a low lasing threshold at room temperature in the AlGaAs double heterostructure laser was achieved [5] and in the spring of 1970 continuous lasing at room temperature in these lasers has been demonstrated [6].

This report will examine some of the details of almost a decade path of a semiconductor laser from the pulsed mode at a temperature of liquid nitrogen to a continuous mode at room temperature. The results of this decade were considered as the seed from which the modern semiconductor optoelectronics started to grow [7].

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