

**Table II. Breakthrough of early stage VCSEL research**

(Result from Iga's Group are depicted by yellow marker.

Other's activities are listed by name)

1977.03.22	The first idea, on Lab. Notebook[A1]
1978.03.28	The first report of the 1977 idea[A5]
1978.11	The 2nd report of the idea[A6]
1979.09	R. D. Burnham: Xerox patent, applied[B13]
1979.12	The first report on VCSEL lasing oscillation[A7]
1980.01	Titech patent, applied[A21]
1982.05	10-micron-cavity length GaInAsP VCSEL[A8]
1985.01	Two-dimensional VCSEL array[A20]
1986.10	6-mA threshold current GaAs VCSEL[A10]
1988.07	GaAs/AlGaAs DBR VCSEL[A17]
1988.09	Detailed device characteristics VCSEL[A11]
1988.09	The first room temperature CW oscillation[A12]
1989.03	L. A. Coldren: Periodic gain by quantum wells [B26]
1989.07	J. L. Jewell: Room temperature CW oscillation by Micro-post [B15]
1990-1997	L. A. Coldren, D. L. Huffaker, K. J. Ebeling, P. D. Dapkus and G. Deppe, et al.: Sub-mA threshold current [B17], [B18], [B19], [B20], [B21], [B22], [B23], [B25]
1992.07	Mechanical wavelength tuning of VCSEL demonstration [A18]
1995.02	K. D. Choquette: High power convergence efficiency [B24]
1995.03	Record low threshold current $70 \mu A$ [A14]
1995.09	C. Chang-Hasnain: MEMS wavelength tunable VCSEL [B28]