

Table I Summary of the historical events of VCSEL research by Kenichi Iga's group and by other groups

	Organization	Tokyo Inst. Tech.	Xerox	AT&T Bell Labs.	U.C. Santa Barbara	U. Ulm	NEC	U. Texas	Sandia Nat'l Labs.	U. Southern Calif.	Stanford U./ UC Berkeley
	Key player	Kenichi Iga	W. Streifer	J. Jewell	L. Coldren, J. Bowers	K. J. Ebeling	T. Numai	D. L. Huffaker	K.D. Choquette	P. D. Dapkus	C. J. Chang-Hasnain
original idea		March 22,1977 [A1]									
Conference Presentation	The first/second domestic conf.	Mar. 1978[A5] Nov.1978[A6] JSAP									
Patent	Application filed Granted	Jan. 9, 1980 [A21] Nov. 30, 1989	Sept. 13, 1979[B13] Jan. 5, 1982								
Lasing	77K pulse	1979 1200 nm [A7]									
	RT CW	1988 894 nm [A12]									
	RT CW , long wavelength	1993 1374 nm [A13]			1996 1540 nm [B16]						
Single frequency operation		1978 Theory[A4] 1982Experiment[A8]									
Low threshold current	≤ 10 mA	1986 6mA [A9]		1989 1.5mA [B15]							
	≤ 1 mA	1995 0.33 mA [A24]			1990 0.7mA[B17] 1997 0.29mA[B25]	1992 0.65mA[B22] 1997 0.31mA[B23]	1993 0.19mA[B18]	1994 0.225mA[B19]	1995 0.35mA[B24]		
	≤ 100 μ A	1995 70 μ A [A14]						1994 91 μ A[B20]			
	≤ 10 μ A									1995 8.7 μ A [B21]	
Wavelength tuning						1992 Current 2.2nm[B22]					1991 Current 18 Å [B27]
		1992 Mechanical 4-8.6nm[A18][A19]									1995 MEMS 15nm[B28]