

Aluminum Gallium Arsenide

(Al_xGa_{1-x}As)

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The Al_xGa_{1-x}As system is technologically one of the most important alloy systems, especially when combined with GaAs. It forms the basis of quantum-well, superlattice, and single-barrier device structures, which in turn have a significant effect on high-speed electro-optics. Because of this, it would be of the utmost importance to have the optical constants, n and k , over a wide spectral range and over the concentration range of $x=0$ to $x=1$, in as narrowly spaced x intervals as possible, preferably $\Delta x=0.1$. This, however, is not the case. In fact, we could find only bits and pieces of data at almost random values of x over narrow spectral ranges, except for $x=0.3$.

There is, however, a fair amount of information about other physical parameters such as lattice constant, density, band gap, and phonon frequency. Because these parameters are useful in many applications, we list Adachi's values [1] for these most commonly used ones:

1. Lattice constant (Å) $a = 5.6533 + 0.0078x$;
2. Density (gm/cm³) $\rho = 5.36 - 1.6x$;
3. Band gap (eV) $E_g = 1.424 + 1.247x$ ($0 < x < 0.45$)
 $= 1.900 + 0.125x + 0.143x^2$ ($0.45 < x < 1.0$);
4. LO phonon energy (meV) $\hbar\omega(\text{GaAs}) = 36.25 - 6.55x + 1.79x^2$
 $\hbar\omega(\text{AlAs}) = 44.63 + 8.78x - 3.32x^2$;
5. TO phonon energy (meV) $\hbar\omega(\text{GaAs}) = 33.29 - 0.64x - 1.16x^2$
 $\hbar\omega(\text{AlAs}) = 44.63 + 0.55x - 0.30x^2$.

We were able to find only one value of $x=0.3$ (within a typical

uncertainty of ± 0.01) where UV, VIS, and IR data have been analyzed to give n and k . Otherwise, there are spectroscopic-ellipsometry data for n and k in the range of 6–1.5 eV for a number of x values near tenths [2], IR reststrahlen data for n and k from 1000–100 cm^{-1} for other values of x [3] and some measurements [4] and calculations [1, 5] of n from 2.5–0.5 eV. In Table I we display the values of x for which we found spectroscopic data in the various photon-energy ranges. It is clear that near $x = 0.3$, we have data for a wide wavelength range, but for other values of x , only data in the visible or IR are available.

In Table II we list n and k data for the values of x noted in Table I. In Fig. 1 we have plotted the values of the optical constants for $x = 0.3$. It is important to note that the end member GaAs ($x = 0$) was previously treated in *HOC I* [6], and that AlAs ($x = 1$) is discussed separately in this volume [7].

In the X-ray region from 10,000–51.5 eV (1.24–240 Å) there are no experimental data. The numbers for $x = 0.3$ listed in Table II were calculated using the Henke model [8, 9]. This model, based on calculated atomic scattering cross-sections, requires a knowledge of the density of $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$, which is given by Adachi [1] to be $g(0.3) = 4.88$. The absorption edges of the atomic constituents are $K(\text{Al}) = 1559.88$ eV, $K(\text{Ga}) = 10368.2$ eV, $K(\text{As}) = 11865$ eV, $L_1(\text{Al}) = 87.01$ eV, $L_1(\text{As}) = 1529.3$ eV, $L_{2,3}(\text{Al}) = 72.78$ eV, $L_{2,3}(\text{Ga}) = 1145.0, 1116.9$ eV, $L_{2,3}(\text{As}) = 1358.7, 1323.5$ eV. The lower-lying energies may be perturbed by the bonding properties of the crystal material. It should be noted that this calculation can be used for any value of x provided that the parameters listed above are appropriately adjusted.

There appear to be no reflectivity data that would yield n and k in the ultraviolet down to 6 eV.

Aspnes *et al.* [2] measured n and k from 6–1.5 eV by spectroscopic ellipsometry from samples close to tenths in x . Values of x are usually determined by X-ray analysis to ± 0.01 . Care was taken to remove or account for the native oxide on the surface.

Interestingly, we find little data for the absorption coefficient at the band edge, presumably because the alloy samples are always on a GaAs substrate with a band gap smaller than the alloy film. This requires a reflection experiment or, for transmission, an etching process to remove the substrate but still support the film.

Below the fundamental band gap E_g , n has been measured for a number of x values [4]. Jensen [5] has developed a model to calculate n in the transparent region for ternary and quaternary semiconductors. Adachi [1] has used a different model to calculate n below the band gap. We have used both models for $x = 0.14$ to determine n and list the values in Table II. In the overlap region (1.2–1.5 eV) agreement is to $\sim 1\%$ at lower energies and increases to $\sim 2\%$ at higher energies. The Adachi calculation does not

seem to work well as E_g is neared, whereas the Jensen calculation is applicable much closer to E_g , even showing a plateauing of the n values. In addition, we have used the latter model [1] to calculate n below the respective band gaps for the tenth values of x , and we list them in Table II. It is also reported that the n values at $0.9\text{ }\mu\text{m}$ below all the band gaps vary linearly with x ; $\Delta n = n(\text{Al}_x\text{Ga}_{1-x}\text{As}) - n(\text{GaAs}) = 0.62x$ [10].

The n and k values in the far infrared for $\text{Al}_x\text{Ga}_{1-x}\text{As}$ were obtained by fitting the reflectivity data [3] taken near normal incidence, that is, within approximately a 10° angle of incidence. The $\text{Al}_x\text{Ga}_{1-x}\text{As}$ samples were grown by an isothermal liquid-phase-epitaxy (LPE) technique for x values ranging from 0 to 0.54. All materials had n -type carrier concentrations of less than $5 \times 10^{16}\text{ cm}^{-3}$. The free-carrier plasma edge was not observed for $\nu > 50\text{ cm}^{-1}$. The alloy compositions were evaluated by analysis of X-ray emission produced from the layer by the electron beam of an ARL model EMX-SM electron-probe microanalyzer. The accuracy of the composition measured was estimated to be within 2%; for example, $\Delta x = \pm 0.01$ for $x = 0.54$.

The optical phonons of the $\text{Al}_x\text{Ga}_{1-x}\text{As}$ behave as the two-mode type [11–13]. The n and k values were calculated by the factorized form of the classical dispersion equation

$$(\nu) = (n + ik)^2 = \frac{(\nu_{11}^2 - \nu^2 - i\nu\gamma_{11})(\nu_{12}^2 - \nu^2 - i\nu\gamma_{12})}{(\nu_{21}^2 - \nu^2 - i\nu\gamma_{21})(\nu_{22}^2 - \nu^2 - i\nu\gamma_{22})}$$

where ν_{ii} , ν_{li} , γ_{ii} , and γ_{li} denote TO frequency, LO frequency, TO damping constant, and LO damping constant, respectively. The indexes $i=1$ and $i=2$ identify the parameters for the GaAs-like and the AlAs-like modes, respectively. Those values referred to are shown in Table III [10]. The n and k values are tabulated in the region of $5\text{--}100\text{ }\mu\text{m}$ in Table II.

ACKNOWLEDGMENTS

We thank W. R. Hunter for the calculation of n and k in the X-ray region with the Henke model.

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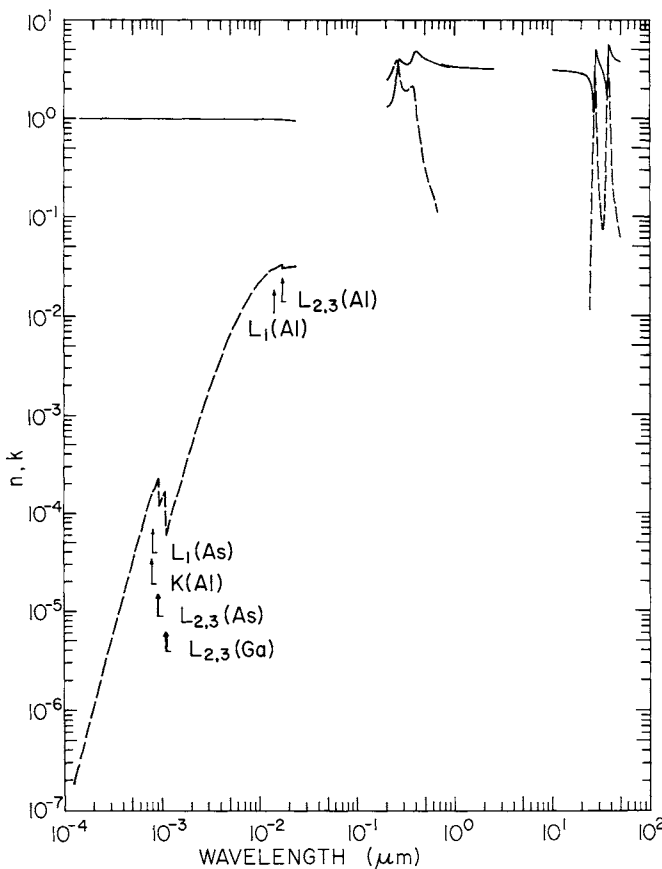


Fig. 1. Log-log plot of n (solid line) and k (dashed line) versus wavelength in micrometers for $\text{Al}_x\text{Ga}_{1-x}\text{As}$ with $x = 0.31 \pm 0.01$.

TABLE I
Values of x for Which Spectroscopic Data for n and k Are Presented in the Various References

x	X-RAY-UV (10000–51 eV) n & k	UV-VIS (6–1.5 eV) n & k	Near IR (2.7–0.5 eV) n	Far IR (1000–200 cm^{-1}) n & k
0	[6]	[6]	[6]	[6] See <i>HOC I</i>
0.099		[2]		
0.1			[1]	
0.14			[1, 5]	[3]
0.18				[3]
0.198		[2]		
0.2			[1]	
0.30	[8, 9]		[1]	[3]
0.315		[2]		
0.36				[3]
0.4			[1]	
0.419		[2]		
0.44				[3]
0.491		[2]		
0.5			[1]	
0.54				[3]
0.590		[2]		
0.6			[1]	
0.700		[2]	[1]	
0.8			[1]	
0.804		[2]		
0.9			[1]	
1.0	[7]	[7]	[7]	[7] See <i>HOC II</i>

TABLE II
Value of n and k for $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$ (X-RAY-UV) from Various References^a

eV	cm^{-1}	\AA	n	k
10000		1.240	0.99999150[8,9]	1.74×10^{-7} [8,9]
9772		1.269	0.99999110	1.90
9331		1.329	0.99999010	2.27
8909		1.392	0.9999891	2.71
8507		1.458	0.9999880	3.23
8123		1.526	0.9999868	3.85
7756		1.599	0.9999854	4.59
7406		1.674	0.9999840	5.46
7072		1.753	0.9999824	6.50
6752		1.836	0.9999806	7.73
6447		1.923	0.9999787	9.20×10^{-7}
6156		2.014	0.9999766	1.09×10^{-6}
5878		2.109	0.9999743	1.30
5613		2.209	0.9999717	1.55
5359		2.314	0.9999689	1.84
5117		2.423	0.9999658	2.18
4886		2.538	0.9999624	2.59
4665		2.658	0.9999587	3.08
4455		2.783	0.9999546	3.66
4254		2.915	0.9999501	4.34
4062		3.053	0.9999452	5.15
3878		3.197	0.9999399	6.11
3703		3.348	0.9999340	7.24
3536		3.506	0.9999275	8.59×10^{-6}
3376		3.672	0.9999205	1.02×10^{-5}
3224		3.846	0.9999128	1.21
3078		4.028	0.9999044	1.43
2939		4.218	0.999895	1.69
2807		4.418	0.999885	2.00
2680		4.627	0.999875	2.37
2559		4.846	0.999863	2.80
2443		5.075	0.999850	3.30
2333		5.315	0.999837	3.90
2228		5.566	0.999822	4.60
2127		5.829	0.999807	5.42
2031		6.105	0.999791	6.38
1939		6.394	0.999774	7.49
1852		6.696	0.999757	8.80×10^{-5}
1768		7.013	0.999739	1.03×10^{-4}
1688		7.344	0.999723	1.21
1612		7.691	0.999710	1.42
1575		7.871	0.999708	1.53
1539		8.055	0.999706	1.58
1504		8.244	0.999697	1.58
1470		8.436	0.999687	1.70
1436		8.633	0.999683	1.83
1403		8.835	0.999683	1.98
1371		9.041	0.999692	2.14
1340		9.253	0.999735	2.31

TABLE II (Continued)
 $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$ (X-RAY-UV)

eV	cm^{-1}	\AA	n	k
1309		9.469	0.999732	1.23
1280		9.690	0.999684	1.21
1250		9.917	0.999652	1.29
1222		10.15	0.999629	1.38
1194		10.39	0.999612	1.47
1167		10.63	0.999601	1.57
1140		10.88	0.999603	1.67×10^{-4}
1114		11.13	0.999635	6.37×10^{-5}
1088		11.39	0.999554	6.88
1064		11.66	0.999503	7.43
1039		11.93	0.999461	8.02
1016		12.21	0.999421	8.66×10^{-5}
969.7		12.79	0.999342	1.01×10^{-4}
925.9		13.39	0.999261	1.18
884.1		14.02	0.999175	1.38
844.2		14.69	0.999083	1.61
806.0		15.38	0.99898	1.88
769.7		16.11	0.99888	2.21
734.9		16.87	0.99876	2.59
701.7		17.67	0.99863	3.03
670.0		18.51	0.99850	3.54
639.8		19.38	0.99835	4.12
610.9		20.30	0.99819	4.79
583.3		21.26	0.99802	5.55
557.0		22.26	0.99784	6.43
531.8		23.31	0.99764	7.45
507.8		24.42	0.99743	8.59
484.9		25.57	0.99720	9.89×10^{-4}
463.0		26.78	0.99695	1.14×10^{-3}
442.1		28.05	0.99669	1.31
422.1		29.37	0.99641	1.50
403.0		30.76	0.99611	1.73
384.8		32.22	0.99581	1.97
367.5		33.74	0.99548	2.24
350.9		35.34	0.99513	2.55
335.0		37.01	0.99476	2.90
319.9		38.76	0.99438	3.30
305.5		40.59	0.99401	3.75
291.7		42.51	0.99361	4.23
278.5		44.52	0.99321	4.77
265.9		46.63	0.99283	5.36
253.9		48.83	0.99243	6.00
242.5		51.14	0.99203	6.69
231.5		53.56	0.99163	7.44
221.1		56.09	0.99125	8.29
211.1		58.74	0.99096	9.20×10^{-3}
201.5		61.52	0.99069	1.01×10^{-2}
192.4		64.43	0.99035	1.10
183.7		67.48	0.99008	1.20
175.5		70.67	0.98988	1.31

TABLE II (Continued)
 $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$ (X-RAY-UV)

eV	cm^{-1}	\AA	n	k
167.5		74.01	0.98966	1.41
160.0		77.51	0.98947	1.53
152.7		81.17	0.98931	1.65
149.3		83.07	0.98928	1.71
145.8		85.01	0.98930	1.78
142.5		87.00	0.98933	1.84
139.3		89.03	0.98937	1.90
136.1		91.11	0.98941	1.95
133.0		93.24	0.98942	2.01
129.9		95.42	0.98944	2.07
127.0		97.66	0.98948	2.13
124.1		99.94	0.98956	2.19
121.2		102.3	0.98967	2.24
118.5		104.7	0.98972	2.30
115.8		107.1	0.98978	2.35
113.1		109.6	0.98985	2.40
110.5		112.2	0.98994	2.45
108.0		114.8	0.98999	2.50
105.5		117.5	0.99001	2.54
103.1		120.2	0.99002	2.59
100.8		123.0	0.99003	2.64
98.47		125.9	0.99005	2.68
96.22		128.9	0.99007	2.72
94.03		131.9	0.99002	2.76
91.88		134.9	0.98995	2.80
89.78		138.1	0.98988	2.84
87.73		141.3	0.98983	2.89
85.73		144.6	0.98987	2.92
83.77		148.0	0.98978	2.95
81.85		151.5	0.98962	2.97
79.99		155.0	0.98942	3.00
78.16		158.6	0.98924	3.03
76.37		162.3	0.98909	3.06
74.63		166.1	0.98911	3.09
72.92		170.0	0.98957	3.12
71.26		174.0	0.98850	2.91
69.63		178.1	0.98727	2.94
68.04		182.2	0.98637	2.97
66.49		186.5	0.98554	2.99
64.97		190.8	0.98462	3.00
63.49		195.3	0.98370	3.01
62.04		199.9	0.98272	3.02
60.62		204.5	0.98162	3.02
59.24		209.3	0.98038	3.01
57.88		214.2	0.97898	3.01
56.56		219.2	0.97746	3.01
55.27		224.3	0.97582	3.02
54.01		229.6	0.97407	3.03
52.77		234.9	0.97221	3.03
51.57		240.4	0.970077	3.05×10^{-2}

TABLE II (Continued)

 $\text{Al}_{0.099}\text{Ga}_{0.901}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.311[2]	2.457[2]
5.9	47586	0.2101	1.318	2.538
5.8	46780	0.2138	1.330	2.608
5.7	45973	0.2175	1.345	2.698
5.6	45167	0.2214	1.371	2.800
5.5	44360	0.2254	1.408	2.921
5.4	43554	0.2296	1.459	3.059
5.3	42747	0.2339	1.531	3.223
5.2	41940	0.2384	1.634	3.433
5.1	41134	0.2431	1.819	3.704
5.0	40327	0.2480	2.207	3.983
4.9	39521	0.2530	2.772	4.036
4.8	38714	0.2583	3.267	3.846
4.7	37908	0.2638	3.611	3.536
4.6	37101	0.2695	3.829	3.229
4.5	36295	0.2755	4.010	2.876
4.4	35488	0.2818	4.017	2.507
4.3	34682	0.2883	3.922	2.240
4.2	33875	0.2952	3.801	2.074
4.1	33068	0.3024	3.697	1.983
4.0	32262	0.3100	3.618	1.937
3.9	31455	0.3179	3.566	1.920
3.8	30649	0.3263	3.537	1.924
3.7	29842	0.3351	3.532	1.945
3.6	29036	0.3444	3.552	1.979
3.5	28229	0.3542	3.601	2.030
3.4	27423	0.3647	3.690	2.100
3.3	26616	0.3757	3.864	2.203
3.2	25810	0.3875	4.253	2.187
3.1	25003	0.4000	4.460	1.949
3.0	24196	0.4133	4.838	1.836
2.9	23390	0.4275	4.968	1.126
2.8	22583	0.4428	4.725	0.763
2.7	21777	0.4592	4.518	0.575
2.6	20970	0.4769	4.353	0.462
2.5	20164	0.4959	4.220	0.382
2.4	19357	0.5166	4.111	0.320
2.3	18551	0.5391	4.018	0.276
2.2	17744	0.5636	3.940	0.237
2.1	16938	0.5904	3.876	0.199
2.0	16131	0.6199	3.820	0.171
1.9	15324	0.6526	3.775	0.127
1.8	14518	0.6889	3.716	0.099
1.7	13711	0.7293	3.678	0.082
1.6	12905	0.7749	3.661	0.059
1.5	12098	0.8266	3.572	

TABLE II (Continued)

 $\text{Al}_{0.198}\text{Ga}_{0.802}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.333[2]	2.457[2]
5.9	47586	0.2101	1.339	2.531
5.8	46780	0.2138	1.349	2.600
5.7	45973	0.2175	1.366	2.688
5.6	45167	0.2214	1.393	2.794
5.5	44360	0.2254	1.433	2.912
5.4	43554	0.2296	1.490	3.049
5.3	42747	0.2339	1.567	3.208
5.2	41940	0.2384	1.677	3.407
5.1	41134	0.2431	1.860	3.654
5.0	40327	0.2480	2.210	3.914
4.9	39521	0.2530	2.734	3.997
4.8	38714	0.2583	3.238	3.867
4.7	37908	0.2638	3.638	3.575
4.6	37101	0.2695	3.924	3.223
4.5	36295	0.2755	4.053	2.803
4.4	35488	0.2818	4.018	2.449
4.3	34682	0.2883	3.911	2.206
4.2	33875	0.2952	3.795	2.059
4.1	33068	0.3024	3.701	1.976
4.0	32262	0.3100	3.633	1.933
3.9	31455	0.3179	3.588	1.917
3.8	30649	0.3263	3.568	1.922
3.7	29842	0.3351	3.572	1.942
3.6	29036	0.3444	3.602	1.979
3.5	28229	0.3542	3.668	2.034
3.4	27423	0.3647	3.792	2.115
3.3	26616	0.3757	4.084	2.180
3.2	25810	0.3875	4.379	1.978
3.1	25003	0.4000	4.607	1.857
3.0	24196	0.4133	4.943	1.322
2.9	23390	0.4275	4.757	0.865
2.8	22583	0.4428	4.547	0.636
2.7	21777	0.4592	4.375	0.499
2.6	20970	0.4769	4.235	0.409
2.5	20164	0.4959	4.118	0.341
2.4	19357	0.5166	4.022	0.288
2.3	18551	0.5391	3.940	0.242
2.2	17744	0.5636	3.871	0.202
2.1	16938	0.5904	3.815	0.165
2.0	16131	0.6199	3.759	0.118
1.9	15324	0.6526	3.700	0.094
1.8	14518	0.6889	3.662	0.082
1.7	13711	0.7293	3.635	0.002
1.6	12905	0.7749	3.536	0.002
1.5	12098	0.8266	3.457	

TABLE II (Continued)

 $\text{Al}_{0.315}\text{Ga}_{0.685}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.347[2]	2.443[2]
5.9	47586	0.2101	1.338	2.502
5.8	46780	0.2138	1.352	2.577
5.7	45973	0.2175	1.367	2.669
5.6	45167	0.2214	1.393	2.776
5.5	44360	0.2254	1.437	2.893
5.4	43554	0.2296	1.497	3.030
5.3	42747	0.2339	1.581	3.187
5.2	41940	0.2384	1.696	3.376
5.1	41134	0.2431	1.878	3.604
5.0	40327	0.2480	2.198	3.845
4.9	39521	0.2530	2.684	3.957
4.8	38714	0.2583	3.196	3.881
4.7	37908	0.2638	3.669	3.617
4.6	37101	0.2695	3.982	3.177
4.5	36295	0.2755	4.062	2.733
4.4	35488	0.2818	3.999	2.393
4.3	34682	0.2883	3.883	2.172
4.2	33875	0.2952	3.772	2.040
4.1	33068	0.3024	3.686	1.966
4.0	32262	0.3100	3.625	1.927
3.9	31455	0.3179	3.588	1.914
3.8	30649	0.3263	3.575	1.921
3.7	29842	0.3351	3.589	1.946
3.6	29036	0.3444	3.633	1.988
3.5	28229	0.3542	3.724	2.054
3.4	27423	0.3647	3.922	2.134
3.3	26616	0.3757	4.246	2.041
3.2	25810	0.3875	4.456	1.879
3.1	25003	0.4000	4.825	1.558
3.0	24196	0.4133	4.781	1.012
2.9	23390	0.4275	4.582	0.722
2.8	22583	0.4428	4.404	0.556
2.7	21777	0.4592	4.258	0.446
2.6	20970	0.4769	4.135	0.367
2.5	20164	0.4959	4.032	0.305
2.4	19357	0.5166	3.945	0.258
2.3	18551	0.5391	3.872	0.227
2.2	17744	0.5636	3.815	0.202
2.1	16938	0.5904	3.750	0.167
2.0	16131	0.6199	3.690	0.145
1.9	15324	0.6526	3.650	0.111
1.8	14518	0.6889	3.592	0.008
1.7	13711	0.7293	3.509	
1.6	12905	0.7749	3.456	
1.5	12098	0.8266	3.404	

TABLE II (Continued)

 $\text{Al}_{0.419}\text{Ga}_{0.581}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.353[2]	2.440[2]
5.9	47586	0.2101	1.350	2.507
5.8	46780	0.2138	1.357	2.574
5.7	45973	0.2175	1.377	2.675
5.6	45167	0.2214	1.406	2.783
5.5	44360	0.2254	1.456	2.908
5.4	43554	0.2296	1.523	3.047
5.3	42747	0.2339	1.613	3.201
5.2	41940	0.2384	1.740	3.384
5.1	41134	0.2431	1.926	3.598
5.0	40327	0.2480	2.234	3.822
4.9	39521	0.2530	2.695	3.937
4.8	38714	0.2583	3.200	3.909
4.7	37908	0.2638	3.733	3.646
4.6	37101	0.2695	4.054	3.157
4.5	36295	0.2755	4.103	2.691
4.4	35488	0.2818	4.014	2.363
4.3	34682	0.2883	3.897	2.161
4.2	33875	0.2952	3.794	2.040
4.1	33068	0.3024	3.719	1.971
4.0	32262	0.3100	3.667	1.936
3.9	31455	0.3179	3.640	1.924
3.8	30649	0.3263	3.640	1.931
3.7	29842	0.3351	3.668	1.958
3.6	29036	0.3444	3.736	2.005
3.5	28229	0.3542	3.887	2.071
3.4	27423	0.3647	4.172	2.042
3.3	26616	0.3757	4.401	1.870
3.2	25810	0.3875	4.706	1.640
3.1	25003	0.4000	4.778	1.119
3.0	24196	0.4133	4.605	0.786
2.9	23390	0.4275	4.430	0.596
2.8	22583	0.4428	4.280	0.472
2.7	21777	0.4592	4.154	0.385
2.6	20970	0.4769	4.047	0.319
2.5	20164	0.4959	3.957	0.268
2.4	19357	0.5166	3.881	0.219
2.3	18551	0.5391	3.820	0.178
2.2	17744	0.5636	3.747	0.134
2.1	16938	0.5904	3.686	0.100
2.0	16131	0.6199	3.664	0.059
1.9	15324	0.6526	3.559	0.003
1.8	14518	0.6889	3.479	
1.7	13711	0.7293	3.422	
1.6	12905	0.7749	3.378	
1.5	12098	0.8266	3.341	

TABLE II (Continued)

 $\text{Al}_{0.491}\text{Ga}_{0.509}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.366[2]	2.418[2]
5.9	47586	0.2101	1.363	2.490
5.8	46780	0.2138	1.364	2.572
5.7	45973	0.2175	1.379	2.666
5.6	45167	0.2214	1.412	2.780
5.5	44360	0.2254	1.462	2.903
5.4	43554	0.2296	1.532	3.045
5.3	42747	0.2339	1.632	3.199
5.2	41940	0.2384	1.763	3.378
5.1	41134	0.2431	1.951	3.579
5.0	40327	0.2480	2.250	3.787
4.9	39521	0.2530	2.686	3.904
4.8	38714	0.2583	3.187	3.899
4.7	37908	0.2638	3.731	3.645
4.6	37101	0.2695	4.072	3.147
4.5	36295	0.2755	4.107	2.668
4.4	35488	0.2818	4.009	2.351
4.3	34682	0.2883	3.894	2.159
4.2	33875	0.2952	3.798	2.046
4.1	33068	0.3024	3.730	1.980
4.0	32262	0.3100	3.688	1.945
3.9	31455	0.3179	3.671	1.933
3.8	30649	0.3263	3.680	1.942
3.7	29842	0.3351	3.724	1.969
3.6	29036	0.3444	3.822	2.017
3.5	28229	0.3542	4.034	2.049
3.4	27423	0.3647	4.294	1.922
3.3	26616	0.3757	4.525	1.748
3.2	25810	0.3875	4.753	1.340
3.1	25003	0.4000	4.654	0.926
3.0	24196	0.4133	4.483	0.684
2.9	23390	0.4275	4.328	0.534
2.8	22583	0.4428	4.195	0.429
2.7	21777	0.4592	4.081	0.355
2.6	20970	0.4769	3.985	0.292
2.5	20164	0.4959	3.903	0.245
2.4	19357	0.5166	3.838	0.205
2.3	18551	0.5391	3.761	0.164
2.2	17744	0.5636	3.696	0.133
2.1	16938	0.5904	3.665	0.088
2.0	16131	0.6199	3.558	0.002
1.9	15324	0.6526	3.477	
1.8	14518	0.6889	3.417	
1.7	13711	0.7293	3.368	
1.6	12905	0.7749	3.329	
1.5	12098	0.8266	3.283	

TABLE II (Continued)

 $\text{Al}_{0.590}\text{Ga}_{0.410}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.385[2]	2.420[2]
5.9	47586	0.2101	1.370	2.485
5.8	46780	0.2138	1.370	2.565
5.7	45973	0.2175	1.389	2.669
5.6	45167	0.2214	1.422	2.785
5.5	44360	0.2254	1.475	2.915
5.4	43554	0.2296	1.553	3.059
5.3	42747	0.2339	1.661	3.217
5.2	41940	0.2384	1.805	3.392
5.1	41134	0.2431	2.007	3.581
5.0	40327	0.2480	2.304	3.772
4.9	39521	0.2530	2.740	3.881
4.8	38714	0.2583	3.221	3.866
4.7	37908	0.2638	3.762	3.617
4.6	37101	0.2695	4.120	3.107
4.5	36295	0.2755	4.127	2.616
4.4	35488	0.2818	4.015	2.318
4.3	34682	0.2883	3.903	2.142
4.2	33875	0.2952	3.815	2.038
4.1	33068	0.3024	3.758	1.978
4.0	32262	0.3100	3.729	1.947
3.9	31455	0.3179	3.725	1.935
3.8	30649	0.3263	3.750	1.944
3.7	29842	0.3351	3.822	1.973
3.6	29036	0.3444	3.977	2.002
3.5	28229	0.3542	4.224	1.924
3.4	27423	0.3647	4.429	1.754
3.3	26616	0.3757	4.665	1.450
3.2	25810	0.3875	4.649	1.028
3.1	25003	0.4000	4.497	0.754
3.0	24196	0.4133	4.343	0.584
2.9	23390	0.4275	4.208	0.468
2.8	22583	0.4428	4.092	0.384
2.7	21777	0.4592	3.992	0.317
2.6	20970	0.4769	3.909	0.262
2.5	20164	0.4959	3.837	0.205
2.4	19357	0.5166	3.758	0.157
2.3	18551	0.5391	3.690	0.126
2.2	17744	0.5636	3.658	0.063
2.1	16938	0.5904	3.546	0.005
2.0	16131	0.6199	3.467	
1.9	15324	0.6526	3.405	
1.8	14518	0.6889	3.354	
1.7	13711	0.7293	3.313	
1.6	12905	0.7749	3.274	
1.5	12098	0.8266	3.237	

TABLE II (Continued)

 $\text{Al}_{0.700}\text{Ga}_{0.300}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.377[2]	2.426[2]
5.9	47586	0.2101	1.366	2.493
5.8	46780	0.2138	1.365	2.581
5.7	45973	0.2175	1.375	2.688
5.6	45167	0.2214	1.407	2.809
5.5	44360	0.2254	1.462	2.946
5.4	43554	0.2296	1.545	3.098
5.3	42747	0.2339	1.662	3.269
5.2	41940	0.2384	1.829	3.445
5.1	41134	0.2431	2.049	3.620
5.0	40327	0.2480	2.354	3.788
4.9	39521	0.2530	2.777	3.873
4.8	38714	0.2583	3.214	3.853
4.7	37908	0.2638	3.758	3.637
4.6	37101	0.2695	4.144	3.150
4.5	36295	0.2755	4.142	2.645
4.4	35488	0.2818	4.028	2.365
4.3	34682	0.2883	3.932	2.206
4.2	33875	0.2952	3.868	2.111
4.1	33068	0.3024	3.835	2.055
4.0	32262	0.3100	3.836	2.023
3.9	31455	0.3179	3.868	2.009
3.8	30649	0.3263	3.947	2.006
3.7	29842	0.3351	4.103	1.993
3.6	29036	0.3444	4.319	1.877
3.5	28229	0.3542	4.502	1.678
3.4	27423	0.3647	4.665	1.357
3.3	26616	0.3757	4.615	0.980
3.2	25810	0.3875	4.471	0.735
3.1	25003	0.4000	4.325	0.574
3.0	24196	0.4133	4.196	0.460
2.9	23390	0.4275	4.084	0.374
2.8	22583	0.4428	3.987	0.307
2.7	21777	0.4592	3.906	0.245
2.6	20970	0.4769	3.823	0.184
2.5	20164	0.4959	3.746	0.129
2.4	19357	0.5166	3.696	0.069
2.3	18551	0.5391	3.595	0.002
2.2	17744	0.5636	3.500	
2.1	16938	0.5904	3.425	
2.0	16131	0.6199	3.361	
1.9	15324	0.6526	3.306	
1.8	14518	0.6889	3.261	
1.7	13711	0.7293	3.225	
1.6	12905	0.7749	3.188	
1.5	12098	0.8266	3.153	

TABLE II (Continued)

 $\text{Al}_{0.804}\text{Ga}_{0.196}\text{As}$ (UV-VIS)

eV	cm^{-1}	μm	n	k
6.0	48393	0.2066	1.368[2]	2.409[2]
5.9	47586	0.2101	1.360	2.473
5.8	46780	0.2138	1.354	2.560
5.7	45973	0.2175	1.370	2.667
5.6	45167	0.2214	1.399	2.792
5.5	44360	0.2254	1.447	2.935
5.4	43554	0.2296	1.528	3.104
5.3	42747	0.2339	1.661	3.293
5.2	41940	0.2384	1.857	3.475
5.1	41134	0.2431	2.110	3.635
5.0	40327	0.2480	2.426	3.763
4.9	39521	0.2530	2.833	3.815
4.8	38714	0.2583	3.233	3.765
4.7	37908	0.2638	3.751	3.582
4.6	37101	0.2695	4.107	3.128
4.5	36295	0.2755	4.112	2.639
4.4	35488	0.2818	4.004	2.389
4.3	34682	0.2883	3.928	2.256
4.2	33875	0.2952	3.893	2.183
4.1	33068	0.3024	3.904	2.144
4.0	32262	0.3100	3.962	2.119
3.9	31455	0.3179	4.078	2.092
3.8	30649	0.3263	4.267	2.013
3.7	29842	0.3351	4.462	1.820
3.6	29036	0.3444	4.613	1.561
3.5	28229	0.3542	4.667	1.199
3.4	27423	0.3647	4.562	0.890
3.3	26616	0.3757	4.413	0.685
3.2	25810	0.3875	4.277	0.541
3.1	25003	0.4000	4.155	0.437
3.0	24196	0.4133	4.050	0.353
2.9	23390	0.4275	3.961	0.276
2.8	22583	0.4428	3.872	0.205
2.7	21777	0.4592	3.787	0.161
2.6	20970	0.4769	3.738	0.104
2.5	20164	0.4959	3.635	0.013
2.4	19357	0.5166	3.519	0.004
2.3	18551	0.5391	3.440	0.003
2.2	17744	0.5636	3.378	
2.1	16938	0.5904	3.322	
2.0	16131	0.6199	3.277	
1.9	15324	0.6526	3.236	
1.8	14518	0.6889	3.202	
1.7	13711	0.7293	3.173	
1.6	12905	0.7749	3.147	
1.5	12098	0.8266	3.124	

TABLE II (Continued)
 $\text{Al}_{0.1}\text{Ga}_{0.9}\text{As}$ (VIS-Near IR)

eV	cm^{-1}	μm	n
1.5	12098	0.8266	3.618[1]
1.4	11292	0.8856	3.531
1.3	10485	0.9537	3.484
1.2	9679	1.033	3.452
1.1	8872	1.127	3.428
1.0	8065	1.240	3.409
0.9	7259	1.378	3.395
0.8	6452	1.550	3.383
0.7	5646	1.771	3.373
0.6	4839	2.066	3.365
0.5	4033	2.480	3.359

 $\text{Al}_{0.14}\text{Ga}_{0.86}\text{As}$ (VIS- Near IR)

1.5	12098	0.8266	3.570[1]
1.4	11292	0.8856	3.503
1.3	10485	0.9537	3.461
1.2	9679	1.033	3.431
1.1	8872	1.127	3.408
1.0	8065	1.240	3.390
0.9	7259	1.378	3.375
0.8	6452	1.550	3.363
0.7	5646	1.771	3.353
0.6	4839	2.066	3.345
0.5	4033	2.480	3.338
1.71	13792	0.7251	3.640[5]
1.70	13711	0.7293	3.642
1.69	13631	0.7336	3.642
1.68	13550	0.7380	3.642
1.67	13469	0.7424	3.643
1.66	13389	0.7469	3.643
1.65	13308	0.7514	3.643
1.64	13227	0.7560	3.644
1.63	13147	0.7606	3.606
1.62	13066	0.7653	3.591
1.61	12985	0.7701	3.579
1.60	12905	0.7749	3.569
1.55	12501	0.7999	3.532
1.50	12098	0.8266	3.505
1.45	11695	0.8551	3.482
1.40	11292	0.8856	3.463
1.35	10888	0.9184	3.445
1.30	10485	0.9537	3.429
1.25	10082	0.9919	3.414
1.20	9679	1.033	3.400

TABLE II (Continued)
 $\text{Al}_{0.2}\text{Ga}_{0.8}\text{As}$ (VIS-Near IR)

eV	cm^{-1}	μm	n
1.6	12905	0.7749	3.603[1]
1.5	12098	0.8266	3.516
1.4	11292	0.8856	3.464
1.3	10485	0.9537	3.428
1.2	9679	1.033	3.400
1.1	8872	1.127	3.377
1.0	8065	1.240	3.359
0.9	7259	1.378	3.345
0.8	6452	1.550	3.333
0.7	5646	1.771	3.323
0.6	4839	2.066	3.314
0.5	4033	2.480	3.308

$\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$ (VIS-Near IR)

1.8	14518	0.6888	3.797[1]
1.7	13711	0.7293	3.580
1.6	12905	0.7749	3.498
1.5	12098	0.8266	3.443
1.4	11292	0.8856	3.403
1.3	10485	0.9537	3.372
1.2	9679	1.033	3.346
1.1	8872	1.127	3.326
1.0	8065	1.240	3.308
0.9	7259	1.378	3.294
0.8	6452	1.550	3.282
0.7	5646	1.771	3.271
0.6	4839	2.066	3.263
0.5	4033	2.480	3.256

$\text{Al}_{0.4}\text{Ga}_{0.6}\text{As}$ (VIS-Near IR)

1.9	15324	0.6526	3.693[1]
1.8	14518	0.6888	3.554
1.7	13711	0.7293	3.475
1.6	12905	0.7749	3.420
1.5	12098	0.8266	3.377
1.4	11292	0.8856	3.343
1.3	10485	0.9537	3.315
1.2	9679	1.033	3.292
1.1	8872	1.127	3.273
1.0	8065	1.240	3.256
0.9	7259	1.378	3.242
0.8	6452	1.550	3.230
0.7	5646	1.771	3.220
0.6	4839	2.066	3.212
0.5	4033	2.480	3.205

TABLE II (Continued)
 $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$ (VIS-Near IR)

eV	cm^{-1}	μm	n
2.0	16131	0.6199	3.635[1]
1.9	15324	0.6526	3.523
1.8	14518	0.6888	3.449
1.7	13711	0.7293	3.393
1.6	12905	0.7749	3.350
1.5	12098	0.8266	3.314
1.4	11292	0.8856	3.284
1.3	10485	0.9537	3.259
1.2	9679	1.033	3.238
1.1	8872	1.127	3.219
1.0	8065	1.240	3.190
0.9	7259	1.378	3.190
0.8	6452	1.550	3.178
0.7	5646	1.771	3.168
0.6	4839	2.066	3.160
0.5	4033	2.480	3.153

$\text{Al}_{0.6}\text{Ga}_{0.4}\text{As}$ (VIS-Near IR)

2.2	17744	0.5636	3.749[1]
2.1	16938	0.5904	3.585
2.0	16131	0.6199	3.489
1.9	15324	0.6526	3.419
1.8	14518	0.6888	3.365
1.7	13711	0.7293	3.320
1.6	12905	0.7749	3.284
1.5	12098	0.8266	3.252
1.4	11292	0.8856	3.226
1.3	10485	0.9537	3.202
1.2	9679	1.033	3.182
1.1	8872	1.127	3.165
1.0	8065	1.240	3.150
0.9	7259	1.378	3.137
0.8	6452	1.550	3.125
0.7	5646	1.771	3.116
0.6	4839	2.066	3.107
0.5	4033	2.480	3.101

$\text{Al}_{0.7}\text{Ga}_{0.3}\text{As}$ (VIS-Near IR)

2.4	19357	0.5166	3.918[1]
2.3	18551	0.5391	3.661
2.2	17744	0.5636	3.538
2.1	16938	0.5904	3.452
2.0	16131	0.6199	3.386
1.9	15324	0.6526	3.333
1.8	14518	0.6888	3.289
1.7	13711	0.7293	3.252
1.6	12905	0.7749	3.219
1.5	12098	0.8266	3.191

TABLE II (Continued)
 $\text{Al}_{0.7}\text{Ga}_{0.3}\text{As}$ (VIS-Near IR)

eV	cm^{-1}	μm	n
1.4	11292	0.8856	3.167
1.3	10485	0.9537	3.146
1.2	9679	1.033	3.127
1.1	8872	1.127	3.110
1.0	8065	1.240	3.096
0.9	7259	1.378	3.083
0.8	6452	1.550	3.072
0.7	5646	1.771	3.063
0.6	4839	2.066	3.055
0.5	4033	2.480	3.048

$\text{Al}_{0.8}\text{Ga}_{0.2}\text{As}$ (VIS-Near IR)

2.5	20164	0.4959	3.746[1]
2.4	19357	0.5166	3.592
2.3	18551	0.5391	3.490
2.2	17744	0.5636	3.413
2.1	16938	0.5904	3.351
2.0	16131	0.6199	3.299
1.9	15324	0.6526	3.256
1.8	14518	0.6888	3.218
1.7	13711	0.7293	3.185
1.6	12905	0.7749	3.156
1.5	12098	0.8266	3.131
1.4	11292	0.8856	3.108
1.3	10485	0.9537	3.088
1.2	9679	1.033	3.071
1.1	8872	1.127	3.055
1.0	8065	1.240	3.041
0.9	7259	1.378	3.029
0.8	6452	1.550	3.018
0.7	5646	1.771	3.009
0.6	4839	2.066	3.002
0.5	4033	2.480	2.995

$\text{Al}_{0.9}\text{Ga}_{0.1}\text{As}$ (VIS-Near IR)

2.7	21777	0.4592	3.834[1]
2.6	20970	0.4769	3.649
2.5	20164	0.4959	3.531
2.4	19357	0.5166	3.442
2.3	18551	0.5391	3.372
2.2	17744	0.5636	3.313
2.1	16938	0.5904	3.263
2.0	16131	0.6199	3.220
1.9	15324	0.6526	3.183
1.8	14518	0.6888	3.149
1.7	13711	0.7293	3.120
1.6	12905	0.7749	3.094
1.5	12098	0.8266	3.070

TABLE II (Continued)
 $\text{Al}_{0.9}\text{Ga}_{0.1}\text{As}$ (VIS-Near IR)

eV	cm^{-1}	μm	n
1.4	11292	0.8856	3.049
1.3	10485	0.9537	3.031
1.2	9679	1.033	3.014
1.1	8872	1.127	2.999
1.0	8065	1.240	2.986
0.9	7259	1.378	2.974
0.8	6452	1.550	2.964
0.7	5646	1.771	2.955
0.6	4839	2.066	2.948
0.5	4033	2.480	2.942

* References are indicated in brackets.

TABLE II (Continued)

Values of n and k for $\text{Al}_{0.14}\text{Ga}_{0.86}\text{As}$ from Various References^a

eV	cm^{-1}	μm	n	k
0.2480	2000	5.00	3.244[3]	1.99×10^{-5} [3]
0.2066	1667	6.00	3.240	2.81
0.1771	1429	7.00	3.236	2.74
0.1550	1250	8.00	3.232	7.43×10^{-5}
0.1378	1111	9.00	3.226	1.43×10^{-4}
0.1240	1000	10.00	3.219	2.38
0.1227	990	10.10	3.219	2.49
0.1215	980	10.20	3.218	2.61
0.1203	970	10.31	3.217	2.74
0.1190	960	10.42	3.216	2.87
0.1178	950	10.53	3.215	3.01
0.1165	940	10.64	3.215	3.16
0.1153	930	10.75	3.214	3.32
0.1141	920	10.87	3.213	3.48
0.1128	910	10.99	3.212	3.66
0.1116	900	11.11	3.211	3.85
0.1103	890	11.24	3.210	4.04
0.1091	880	11.36	3.209	4.25
0.1079	870	11.49	3.208	4.47
0.1066	860	11.63	3.206	4.71
0.1054	850	11.76	3.205	4.96
0.1041	840	11.90	3.204	5.23
0.1029	830	12.05	3.203	5.51
0.1017	820	12.20	3.201	5.82
0.1004	810	12.35	3.200	6.14
0.0992	800	12.50	3.198	6.49
0.0979	790	12.66	3.197	6.87
0.0967	780	12.82	3.195	7.27
0.0955	770	12.99	3.193	7.70
0.0942	760	13.16	3.191	8.16
0.0930	750	13.33	3.189	8.66
0.0917	740	13.51	3.187	9.20
0.0905	730	13.70	3.185	9.78×10^{-4}
0.0893	720	13.89	3.183	1.04×10^{-3}
0.0880	710	14.08	3.180	1.11
0.0868	700	14.29	3.178	1.18
0.0855	690	14.49	3.175	1.27
0.0843	680	14.71	3.172	1.35
0.0831	670	14.93	3.169	1.45
0.0818	660	15.15	3.166	1.56
0.0806	650	15.38	3.163	1.68
0.0793	640	15.63	3.159	1.81
0.0781	630	15.87	3.155	1.95
0.0769	620	16.13	3.151	2.11
0.0756	610	16.39	3.146	2.29
0.0744	600	16.67	3.141	2.49
0.0731	590	16.95	3.136	2.71
0.0719	580	17.24	3.130	2.97
0.0707	570	17.54	3.124	3.26
0.0694	560	17.86	3.117	3.59

TABLE II (Continued)

$\text{Al}_{0.14}\text{Ga}_{0.86}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0682	550	18.18	3.110	3.97
0.0669	540	18.52	3.101	4.41
0.0657	530	18.87	3.092	4.92
0.0645	520	19.23	3.082	5.53
0.0632	510	19.61	3.071	6.25
0.0620	500	20.00	3.058	7.12
0.0608	490	20.41	3.044	8.17
0.0595	480	20.83	3.028	9.48×10^{-3}
0.0583	470	21.28	3.009	1.11×10^{-2}
0.0570	460	21.74	2.987	1.32
0.0558	450	22.22	2.961	1.60
0.0555	448	22.32	2.955	1.67
0.0553	446	22.42	2.949	1.74
0.0550	444	22.52	2.943	1.82
0.0548	442	22.62	2.936	1.90
0.0546	440	22.73	2.930	1.99
0.0543	438	22.83	2.922	2.08
0.0541	436	22.94	2.915	2.18
0.0538	434	23.04	2.907	2.29
0.0536	432	23.15	2.899	2.40
0.0533	430	23.26	2.891	2.53
0.0531	428	23.36	2.882	2.67
0.0528	426	23.47	2.872	2.81
0.0526	424	23.58	2.862	2.98
0.0523	422	23.70	2.852	3.15
0.0521	420	23.81	2.841	3.34
0.0518	418	23.92	2.829	3.56
0.0516	416	24.04	2.817	3.79
0.0513	414	24.15	2.803	4.05
0.0511	412	24.27	2.789	4.34
0.0508	410	24.39	2.774	4.66
0.0506	408	24.51	2.758	5.02
0.0503	406	24.63	2.741	5.43
0.0501	404	24.75	2.722	5.89
0.0498	402	24.88	2.702	6.42
0.0496	400	25.00	2.680	7.02
0.0493	398	25.13	2.656	7.73
0.0491	396	25.25	2.630	8.54
0.0488	394	25.38	2.601	9.51×10^{-2}
0.0486	392	25.51	2.569	1.07×10^{-1}
0.0484	390	25.64	2.533	1.20
0.0481	388	25.77	2.493	1.37
0.0479	386	25.91	2.448	1.58
0.0476	384	26.04	2.396	1.84
0.0474	382	26.18	2.337	2.18
0.0471	380	26.32	2.270	2.62
0.0469	378	26.46	2.191	3.22
0.0466	376	26.60	2.102	4.04
0.0464	374	26.74	2.002	5.21
0.0461	372	26.88	1.900	6.92

TABLE II (Continued)

$\text{Al}_{0.14}\text{Ga}_{0.86}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0459	370	27.03	1.819	9.36×10^{-1}
0.0456	368	27.17	1.805	1.26×10^0
0.0454	366	27.32	1.913	1.65
0.0451	364	27.47	2.194	2.05
0.0449	362	27.62	2.694	2.36
0.0446	360	27.78	3.380	2.41
0.0444	358	27.93	4.003	2.07
0.0441	356	28.09	4.291	1.52
0.0439	354	28.25	4.293	1.05×10^0
0.0436	352	28.41	4.177	7.25×10^{-1}
0.0434	350	28.57	4.037	5.19
0.0431	348	28.74	3.906	3.84
0.0429	346	28.90	3.791	2.94
0.0426	344	29.07	3.691	2.31
0.0424	342	29.24	3.604	1.86
0.0422	340	29.41	3.527	1.53
0.0419	338	29.59	3.459	1.29
0.0417	336	29.76	3.397	1.10×10^{-1}
0.0414	334	29.94	3.341	9.55×10^{-2}
0.0412	332	30.12	3.288	8.43
0.0409	330	30.30	3.238	7.56
0.0407	328	30.49	3.191	6.88
0.0404	326	30.67	3.144	6.37
0.0402	324	30.86	3.099	5.99
0.0399	322	31.06	3.054	5.73
0.0397	320	31.25	3.008	5.57
0.0394	318	31.45	2.962	5.51
0.0392	316	31.65	2.914	5.54
0.0389	314	31.85	2.864	5.67
0.0387	312	32.05	2.812	5.90
0.0384	310	32.26	2.756	6.24
0.0382	308	32.47	2.696	6.72
0.0379	306	32.68	2.630	7.35
0.0377	304	32.89	2.558	8.18
0.0374	302	33.11	2.478	9.26×10^{-2}
0.0372	300	33.33	2.388	1.07×10^{-1}
0.0369	298	33.56	2.283	1.25
0.0367	296	33.78	2.162	1.51
0.0365	294	34.01	2.017	1.87
0.0362	292	34.25	1.841	2.39
0.0360	290	34.48	1.620	3.23
0.0357	288	34.72	1.338	4.73
0.0355	286	34.97	1.013	7.69×10^{-1}
0.0352	284	35.21	0.786	1.25×10^0
0.0350	282	35.46	0.715	1.77
0.0347	280	35.71	0.734	2.31
0.0345	278	35.97	0.822	2.88
0.0342	276	36.23	0.992	3.51
0.0340	274	36.50	1.299	4.27
0.0337	272	36.76	1.882	5.18

TABLE II (Continued)

$\text{Al}_{0.14}\text{Ga}_{0.86}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0335	270	37.04	3.097	6.23
0.0332	268	37.31	5.523	6.60
0.0330	266	37.59	7.692	4.63
0.0327	264	37.88	7.611	2.49
0.0325	262	38.17	6.944	1.44×10^0
0.0322	260	38.46	6.375	9.23×10^{-1}
0.0320	258	38.76	5.947	6.45
0.0317	256	39.06	5.623	4.78
0.0315	254	39.37	5.371	3.70
0.0312	252	39.68	5.172	2.96
0.0310	250	40.00	5.009	2.43
0.0304	245	40.82	4.711	1.61
0.0298	240	41.67	4.507	1.16×10^{-1}
0.0291	235	42.55	4.360	8.78×10^{-2}
0.0285	230	43.48	4.247	6.92
0.0279	225	44.44	4.159	5.61
0.0273	220	45.45	4.087	4.66
0.0267	215	46.51	4.028	3.93
0.0260	210	47.62	3.978	3.37
0.0254	205	48.78	3.936	2.92
0.0248	200	50.00	3.899	2.56
0.0207	167	60.00	3.745	1.26×10^{-2}
0.0177	143	70.00	3.684	8.38×10^{-3}
0.0155	125	80.00	3.653	6.35
0.0138	111	90.00	3.634	5.14
0.0124	100	100.00	3.621	4.35

TABLE II (Continued)
 Values of n and k for $\text{Al}_{0.18}\text{Ga}_{0.82}\text{As}$ from Various References^a

eV	cm^{-1}	μm	n	k
0.2480	2000	5.00	3.228[3]	
0.2066	1667	6.00	3.225	
0.1771	1429	7.00	3.221	
0.1550	1250	8.00	3.216	
0.1378	1111	9.00	3.210	
0.1240	1000	10.00	3.203	
0.1227	990	10.10	3.202	
0.1215	980	10.20	3.202	
0.1203	970	10.31	3.201	
0.1190	960	10.42	3.200	
0.1178	950	10.53	3.199	
0.1165	940	10.64	3.198	
0.1153	930	10.75	3.197	
0.1141	920	10.87	3.196	
0.1128	910	10.99	3.195	
0.1116	900	11.11	3.194	
0.1103	890	11.24	3.193	
0.1091	880	11.36	3.192	
0.1079	870	11.49	3.191	
0.1066	860	11.63	3.190	
0.1054	850	11.76	3.188	
0.1041	840	11.90	3.187	
0.1029	830	12.05	3.186	
0.1017	820	12.20	3.184	
0.1004	810	12.35	3.183	
0.0992	800	12.50	3.181	
0.0979	790	12.66	3.179	
0.0967	780	12.82	3.178	
0.0955	770	12.99	3.176	
0.0942	760	13.16	3.174	
0.0930	750	13.33	3.172	
0.0917	740	13.51	3.170	
0.0905	730	13.70	3.168	
0.0893	720	13.89	3.165	
0.0880	710	14.08	3.163	
0.0868	700	14.29	3.160	
0.0855	690	14.49	3.157	
0.0843	680	14.71	3.154	
0.0831	670	14.93	3.151	
0.0818	660	15.15	3.147	
0.0806	650	15.38	3.144	
0.0793	640	15.63	3.140	
0.0781	630	15.87	3.136	
0.0769	620	16.13	3.131	
0.0756	610	16.39	3.126	
0.0744	600	16.67	3.121	
0.0731	590	16.95	3.115	
0.0719	580	17.24	3.109	
0.0707	570	17.54	3.103	
0.0694	560	17.86	3.095	

TABLE II (Continued)

$\text{Al}_{0.18}\text{Ga}_{0.82}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0682	550	18.18	3.087	
0.0669	540	18.52	3.078	
0.0657	530	18.87	3.069	
0.0645	520	19.23	3.058	
0.0632	510	19.61	3.045	
0.0620	500	20.00	3.031	
0.0608	490	20.41	3.016	
0.0595	480	20.83	2.997	
0.0583	470	21.28	2.976	
0.0570	460	21.74	2.951	
0.0558	450	22.22	2.921	
0.0555	448	22.32	2.915	
0.0553	446	22.42	2.908	
0.0550	444	22.52	2.900	
0.0548	442	22.62	2.893	
0.0546	440	22.73	2.885	
0.0543	438	22.83	2.876	
0.0541	436	22.94	2.868	
0.0538	434	23.04	2.859	
0.0536	432	23.15	2.849	
0.0533	430	23.26	2.839	
0.0531	428	23.36	2.828	
0.0528	426	23.47	2.817	
0.0526	424	23.58	2.805	
0.0523	422	23.70	2.792	
0.0521	420	23.81	2.779	
0.0518	418	23.92	2.764	
0.0516	416	24.04	2.749	
0.0513	414	24.15	2.733	
0.0511	412	24.27	2.716	
0.0508	410	24.39	2.697	
0.0506	408	24.51	2.677	
0.0503	406	24.63	2.655	
0.0501	404	24.75	2.631	
0.0498	402	24.88	2.605	
0.0496	400	25.00	2.576	1.56×10^{-2} [3]
0.0493	398	25.13	2.545	2.29
0.0491	396	25.25	2.511	3.17
0.0488	394	25.38	2.472	4.26
0.0486	392	25.51	2.429	5.59
0.0484	390	25.64	2.380	7.27
0.0481	388	25.77	2.325	9.40×10^{-2}
0.0479	386	25.91	2.262	1.21×10^{-1}
0.0476	384	26.04	2.189	1.58
0.0474	382	26.18	2.105	2.07
0.0471	380	26.32	2.007	2.75
0.0469	378	26.46	1.895	3.72
0.0466	376	26.60	1.772	5.15
0.0464	374	26.74	1.653	7.25×10^{-1}
0.0461	372	26.88	1.576	1.02×10^0

TABLE II (Continued)

$\text{Al}_{0.18}\text{Ga}_{0.82}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0459	370	27.03	1.589	1.38
0.0456	368	27.17	1.726	1.78
0.0454	366	27.32	2.012	2.16
0.0451	364	27.47	2.471	2.47
0.0449	362	27.62	3.090	2.60
0.0446	360	27.78	3.731	2.41
0.0444	358	27.93	4.165	1.96
0.0441	356	28.09	4.321	1.47
0.0439	354	28.25	4.299	1.08×10^0
0.0436	352	28.41	4.203	8.01×10^{-1}
0.0434	350	28.57	4.089	6.06
0.0431	348	28.74	3.978	4.70
0.0429	346	28.90	3.876	3.72
0.0426	344	29.07	3.785	2.99
0.0424	342	29.24	3.704	2.44
0.0422	340	29.41	3.632	2.01
0.0419	338	29.59	3.566	1.68
0.0417	336	29.76	3.506	1.41
0.0414	334	29.94	3.451	1.19
0.0412	332	30.12	3.400	1.00×10^{-1}
0.0409	330	30.30	3.351	8.51×10^{-2}
0.0407	328	30.49	3.304	7.22
0.0404	326	30.67	3.259	6.13
0.0402	324	30.86	3.216	5.20
0.0399	322	31.06	3.172	4.40
0.0397	320	31.25	3.129	3.72
0.0394	318	31.45	3.085	3.14
0.0392	316	31.65	3.040	2.66
0.0389	314	31.85	2.994	2.26
0.0387	312	32.05	2.946	1.96
0.0384	310	32.26	2.895	1.75
0.0382	308	32.47	2.841	1.63
0.0379	306	32.68	2.782	1.64
0.0377	304	32.89	2.719	1.78
0.0374	302	33.11	2.649	2.09
0.0372	300	33.33	2.571	2.63
0.0369	298	33.56	2.482	3.46
0.0367	296	33.78	2.380	4.72
0.0365	294	34.01	2.261	6.59
0.0362	292	34.25	2.119	9.43×10^{-2}
0.0360	290	34.48	1.944	1.39×10^{-1}
0.0357	288	34.72	1.724	2.12
0.0355	286	34.97	1.439	3.48
0.0352	284	35.21	1.089	6.36×10^{-1}
0.0350	282	35.46	0.840	1.16×10^0
0.0347	280	35.71	0.802	1.74
0.0345	278	35.97	0.889	2.31
0.0342	276	36.23	1.079	2.90
0.0340	274	36.50	1.409	3.53
0.0337	272	36.76	1.971	4.20

TABLE II (Continued)

$\text{Al}_{0.18}\text{Ga}_{0.82}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0335	270	37.04	2.919	4.79
0.0332	268	37.31	4.321	4.91
0.0330	266	37.59	5.634	4.13
0.0327	264	37.88	6.135	2.94
0.0325	262	38.17	6.049	2.02
0.0322	260	38.46	5.795	1.44
0.0320	258	38.76	5.534	1.08×10^0
0.0317	256	39.06	5.307	8.41×10^{-1}
0.0315	254	39.37	5.117	6.80
0.0312	252	39.68	4.959	5.65
0.0310	250	40.00	4.826	4.79
0.0304	245	40.82	4.574	3.41
0.0298	240	41.67	4.397	2.61
0.0291	235	42.55	4.267	2.09
0.0285	230	43.48	4.167	1.73
0.0279	225	44.44	4.088	1.47
0.0273	220	45.45	4.023	1.27
0.0267	215	46.51	3.970	1.11×10^{-1}
0.0260	210	47.62	3.924	9.87×10^{-2}
0.0254	205	48.78	3.886	8.85
0.0248	200	50.00	3.853	7.99
0.0207	167	60.00	3.710	4.58
0.0177	143	70.00	3.654	3.30
0.0155	125	80.00	3.625	2.62
0.0138	111	90.00	3.607	2.19
0.0124	100	100.00	3.595	1.89

TABLE II (Continued)

Values of n and k for $\text{Al}_{0.30}\text{Ga}_{0.70}\text{As}$ from Various References^a

eV	cm^{-1}	μm	n	k
0.2480	2000	5.00	3.179[3]	
0.2066	1667	6.00	3.175	
0.1771	1429	7.00	3.170	
0.1550	1250	8.00	3.164	
0.1378	1111	9.00	3.157	
0.1240	1000	10.00	3.150	
0.1227	990	10.10	3.149	
0.1215	980	10.20	3.148	
0.1203	970	10.31	3.147	
0.1190	960	10.42	3.146	
0.1178	950	10.53	3.145	
0.1165	940	10.64	3.144	
0.1153	930	10.75	3.143	
0.1141	920	10.87	3.142	
0.1128	910	10.99	3.140	
0.1116	900	11.11	3.139	
0.1103	890	11.24	3.138	
0.1091	880	11.36	3.137	
0.1079	870	11.49	3.135	
0.1066	860	11.63	3.134	
0.1054	850	11.76	3.132	
0.1041	840	11.90	3.131	
0.1029	830	12.05	3.129	
0.1017	820	12.20	3.127	
0.1004	810	12.35	3.126	
0.0992	800	12.50	3.124	
0.0979	790	12.66	3.122	
0.0967	780	12.82	3.120	
0.0955	770	12.99	3.117	
0.0942	760	13.16	3.115	
0.0930	750	13.33	3.113	
0.0917	740	13.51	3.110	
0.0905	730	13.70	3.107	
0.0893	720	13.89	3.104	
0.0880	710	14.08	3.101	
0.0868	700	14.29	3.098	
0.0855	690	14.49	3.095	
0.0843	680	14.71	3.091	
0.0831	670	14.93	3.087	
0.0818	660	15.15	3.083	
0.0806	650	15.38	3.079	
0.0793	640	15.63	3.074	
0.0781	630	15.87	3.069	
0.0769	620	16.13	3.063	
0.0756	610	16.39	3.057	
0.0744	600	16.67	3.051	
0.0731	590	16.95	3.044	
0.0719	580	17.24	3.036	
0.0707	570	17.54	3.028	
0.0694	560	17.86	3.018	

TABLE II (Continued)

$\text{Al}_{0.30}\text{Ga}_{0.70}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0682	550	18.18	3.008	
0.0669	540	18.52	2.997	
0.0657	530	18.87	2.984	
0.0645	520	19.23	2.970	
0.0632	510	19.61	2.954	
0.0620	500	20.00	2.936	
0.0608	490	20.41	2.915	
0.0595	480	20.83	2.891	
0.0583	470	21.28	2.862	
0.0570	460	21.74	2.828	
0.0558	450	22.22	2.786	
0.0555	448	22.32	2.777	
0.0553	446	22.42	2.767	
0.0550	444	22.52	2.757	
0.0548	442	22.62	2.746	
0.0546	440	22.73	2.734	
0.0543	438	22.83	2.722	
0.0541	436	22.94	2.710	
0.0538	434	23.04	2.696	
0.0536	432	23.15	2.682	
0.0533	430	23.26	2.668	
0.0531	428	23.36	2.652	
0.0528	426	23.47	2.635	
0.0526	424	23.58	2.617	
0.0523	422	23.70	2.598	
0.0521	420	23.81	2.578	
0.0518	418	23.92	2.557	
0.0516	416	24.04	2.533	1.12×10^{-2} [3]
0.0513	414	24.15	2.508	1.50
0.0511	412	24.27	2.481	1.95
0.0508	410	24.39	2.452	2.46
0.0506	408	24.51	2.420	3.06
0.0503	406	24.63	2.385	3.76
0.0501	404	24.75	2.346	4.59
0.0498	402	24.88	2.304	5.58
0.0496	400	25.00	2.257	6.78
0.0493	398	25.13	2.205	8.24×10^{-2}
0.0491	396	25.25	2.146	1.00×10^{-1}
0.0488	394	25.38	2.080	1.23
0.0486	392	25.51	2.005	1.51
0.0484	390	25.64	1.918	1.89
0.0481	388	25.77	1.818	2.38
0.0479	386	25.91	1.702	3.06
0.0476	384	26.04	1.567	4.03
0.0474	382	26.18	1.418	5.44
0.0471	380	26.32	1.270	7.52×10^{-1}
0.0469	378	26.46	1.158	1.03×10^0
0.0466	376	26.60	1.114	1.37
0.0464	374	26.74	1.144	1.72
0.0461	372	26.88	1.246	2.10

TABLE II (Continued)

$\text{Al}_{0.30}\text{Ga}_{0.70}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0459	370	27.03	1.427	2.49
0.0456	368	27.17	1.712	2.89
0.0454	366	27.32	2.142	3.27
0.0451	364	27.47	2.761	3.56
0.0449	362	27.62	3.560	3.62
0.0446	360	27.78	4.356	3.28
0.0444	358	27.93	4.869	2.65
0.0441	356	28.09	5.025	2.00
0.0439	354	28.25	4.964	1.48
0.0436	352	28.41	4.820	1.11×10^0
0.0434	350	28.57	4.658	8.59×10^{-1}
0.0431	348	28.74	4.505	6.79
0.0429	346	28.90	4.367	5.49
0.0426	344	29.07	4.245	4.53
0.0424	342	29.24	4.137	3.80
0.0422	340	29.41	4.042	3.23
0.0419	338	29.59	3.957	2.78
0.0417	336	29.76	3.880	2.42
0.0414	334	29.94	3.811	2.12
0.0412	332	30.12	3.748	1.88
0.0409	330	30.30	3.689	1.68
0.0407	328	30.49	3.634	1.51
0.0404	326	30.67	3.583	1.36
0.0402	324	30.86	3.534	1.24
0.0399	322	31.06	3.486	1.13
0.0397	320	31.25	3.441	1.04×10^{-1}
0.0394	318	31.45	3.396	9.66×10^{-2}
0.0392	316	31.65	3.352	9.02
0.0389	314	31.85	3.308	8.49
0.0387	312	32.05	3.263	8.06
0.0384	310	32.26	3.218	7.74
0.0382	308	32.47	3.171	7.52
0.0379	306	32.68	3.122	7.41
0.0377	304	32.89	3.071	7.43
0.0374	302	33.11	3.017	7.59
0.0372	300	33.33	2.958	7.91
0.0369	298	33.56	2.894	8.44
0.0367	296	33.78	2.823	9.24×10^{-2}
0.0365	294	34.01	2.743	1.04×10^{-1}
0.0362	292	34.25	2.653	1.21
0.0360	290	34.48	2.548	1.44
0.0357	288	34.72	2.425	1.78
0.0355	286	34.97	2.277	2.29
0.0352	284	35.21	2.094	3.09
0.0350	282	35.46	1.868	4.41
0.0347	280	35.71	1.598	6.77×10^{-1}
0.0345	278	35.97	1.347	1.09×10^0
0.0342	276	36.23	1.247	1.66
0.0340	274	36.50	1.334	2.28
0.0337	272	36.76	1.606	2.94

TABLE II (Continued)

$\text{Al}_{0.30}\text{Ga}_{0.70}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0335	270	37.04	2.134	3.62
0.0332	268	37.31	3.055	4.18
0.0330	266	37.59	4.381	4.22
0.0327	264	37.88	5.496	3.42
0.0325	262	38.17	5.831	2.36
0.0322	260	38.46	5.705	1.60
0.0320	258	38.76	5.467	1.13×10^0
0.0317	256	39.06	5.237	8.40×10^{-1}
0.0315	254	39.37	5.042	6.53
0.0312	252	39.68	4.879	5.25
0.0310	250	40.00	4.744	4.34
0.0304	245	40.82	4.492	2.95
0.0298	240	41.67	4.320	2.19
0.0291	235	42.55	4.194	1.72
0.0285	230	43.48	4.099	1.40
0.0279	225	44.44	4.025	1.18
0.0273	220	45.45	3.964	1.01×10^{-1}
0.0267	215	46.51	3.914	8.80×10^{-2}
0.0260	210	47.62	3.872	7.78
0.0254	205	48.78	3.836	6.94
0.0248	200	50.00	3.805	6.25
0.0207	167	60.00	3.671	3.57
0.0177	143	70.00	3.618	2.57
0.0155	125	80.00	3.590	2.04
0.0138	111	90.00	3.573	1.70
0.0124	100	100.00	3.561	1.47

TABLE II (Continued)
 Values of n and k for $\text{Al}_{0.36}\text{Ga}_{0.64}\text{As}$ from Various References^a

eV	cm^{-1}	μm	n	k
0.2480	2000	5.00	3.160[3]	
0.2066	1667	6.00	3.155	
0.1771	1429	7.00	3.150	
0.1550	1250	8.00	3.144	
0.1378	1111	9.00	3.137	
0.1240	1000	10.00	3.129	
0.1227	990	10.10	3.128	
0.1215	980	10.20	3.127	
0.1203	970	10.31	3.126	
0.1190	960	10.42	3.125	
0.1178	950	10.53	3.124	
0.1165	940	10.64	3.123	
0.1153	930	10.75	3.122	
0.1141	920	10.87	3.121	
0.1128	910	10.99	3.120	
0.1116	900	11.11	3.118	
0.1103	890	11.24	3.117	
0.1091	880	11.36	3.116	
0.1079	870	11.49	3.114	
0.1066	860	11.63	3.113	
0.1054	850	11.76	3.111	
0.1041	840	11.90	3.109	
0.1029	830	12.05	3.108	
0.1017	820	12.20	3.106	
0.1004	810	12.35	3.104	
0.0992	800	12.50	3.102	
0.0979	790	12.66	3.100	
0.0967	780	12.82	3.098	
0.0955	770	12.99	3.095	
0.0942	760	13.16	3.093	
0.0930	750	13.33	3.090	
0.0917	740	13.51	3.088	
0.0905	730	13.70	3.085	
0.0893	720	13.89	3.082	
0.0880	710	14.08	3.079	
0.0868	700	14.29	3.075	
0.0855	690	14.49	3.071	
0.0843	680	14.71	3.068	
0.0831	670	14.93	3.063	
0.0818	660	15.15	3.059	
0.0806	650	15.38	3.054	
0.0793	640	15.63	3.049	
0.0781	630	15.87	3.044	
0.0769	620	16.13	3.038	
0.0756	610	16.39	3.032	
0.0744	600	16.67	3.025	
0.0731	590	16.95	3.017	
0.0719	580	17.24	3.009	
0.0707	570	17.54	3.000	
0.0694	560	17.86	2.990	

TABLE II (Continued)

$\text{Al}_{0.36}\text{Ga}_{0.64}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0682	550	18.18	2.979	
0.0669	540	18.52	2.967	
0.0657	530	18.87	2.954	
0.0645	520	19.23	2.939	
0.0632	510	19.61	2.921	
0.0620	500	20.00	2.902	
0.0608	490	20.41	2.879	
0.0595	480	20.83	2.853	
0.0583	470	21.28	2.822	
0.0570	460	21.74	2.784	
0.0558	450	22.22	2.738	
0.0555	448	22.32	2.728	
0.0553	446	22.42	2.717	
0.0550	444	22.52	2.706	
0.0548	442	22.62	2.694	
0.0546	440	22.73	2.681	
0.0543	438	22.83	2.668	
0.0541	436	22.94	2.654	
0.0538	434	23.04	2.639	
0.0536	432	23.15	2.623	
0.0533	430	23.26	2.607	
0.0531	428	23.36	2.589	
0.0528	426	23.47	2.570	
0.0526	424	23.58	2.550	
0.0523	422	23.70	2.529	
0.0521	420	23.81	2.506	
0.0518	418	23.92	2.482	
0.0516	416	24.04	2.455	
0.0513	414	24.15	2.427	
0.0511	412	24.27	2.396	
0.0508	410	24.39	2.362	
0.0506	408	24.51	2.325	
0.0503	406	24.63	2.285	
0.0501	404	24.75	2.241	1.53×10^{-2} [3]
0.0498	402	24.88	2.191	2.56
0.0496	400	25.00	2.136	3.84
0.0493	398	25.13	2.075	5.42
0.0491	396	25.25	2.005	7.41
0.0488	394	25.38	1.925	9.96×10^{-2}
0.0486	392	25.51	1.834	1.33×10^{-1}
0.0484	390	25.64	1.727	1.78
0.0481	388	25.77	1.602	2.41
0.0479	386	25.91	1.456	3.32
0.0476	384	26.04	1.290	4.70
0.0474	382	26.18	1.121	6.82
0.0471	380	26.32	0.995	9.74×10^{-1}
0.0469	378	26.46	0.946	1.31×10^0
0.0466	376	26.60	0.967	1.67
0.0464	374	26.74	1.049	2.03
0.0461	372	26.88	1.191	2.40

TABLE II (Continued)

$\text{Al}_{0.36}\text{Ga}_{0.4}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0459	370	27.03	1.411	2.79
0.0456	368	27.17	1.736	3.19
0.0454	366	27.32	2.213	3.56
0.0451	364	27.47	2.887	3.83
0.0449	362	27.62	3.733	3.84
0.0446	360	27.78	4.545	3.44
0.0444	358	27.93	5.043	2.76
0.0441	356	28.09	5.182	2.08
0.0439	354	28.25	5.109	1.55
0.0436	352	28.41	4.955	1.17×10^0
0.0434	350	28.57	4.787	9.04×10^{-1}
0.0431	348	28.74	4.627	7.15
0.0429	346	28.90	4.483	5.77
0.0426	344	29.07	4.355	4.74
0.0424	342	29.24	4.243	3.95
0.0422	340	29.41	4.143	3.33
0.0419	338	29.59	4.055	2.83
0.0417	336	29.76	3.975	2.43
0.0414	334	29.94	3.903	2.09
0.0412	332	30.12	3.837	1.81
0.0409	330	30.30	3.776	1.58
0.0407	328	30.49	3.720	1.37
0.0404	326	30.67	3.667	1.20
0.0402	324	30.86	3.617	1.04×10^{-1}
0.0399	322	31.06	3.569	9.11×10^{-2}
0.0397	320	31.25	3.523	7.93
0.0394	318	31.45	3.478	6.88
0.0392	316	31.65	3.434	5.95
0.0389	314	31.85	3.390	5.12
0.0387	312	32.05	3.347	4.39
0.0384	310	32.26	3.303	3.74
0.0382	308	32.47	3.258	3.18
0.0379	306	32.68	3.211	2.71
0.0377	304	32.89	3.163	2.33
0.0374	302	33.11	3.112	2.04
0.0372	300	33.33	3.057	1.87
0.0369	298	33.56	2.998	1.84
0.0367	296	33.78	2.934	2.00
0.0365	294	34.01	2.863	2.38
0.0362	292	34.25	2.782	3.10
0.0360	290	34.48	2.691	4.28
0.0357	288	34.72	2.584	6.14
0.0355	286	34.97	2.457	9.06×10^{-2}
0.0352	284	35.21	2.303	1.37×10^{-1}
0.0350	282	35.46	2.113	2.14
0.0347	280	35.71	1.875	3.49
0.0345	278	35.97	1.590	6.03×10^{-1}
0.0342	276	36.23	1.346	1.06×10^0
0.0340	274	36.50	1.306	1.67
0.0337	272	36.76	1.485	2.30

TABLE II (Continued)

$\text{Al}_{0.36}\text{Ga}_{0.64}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0335	270	37.04	1.879	2.90
0.0332	268	37.31	2.539	3.41
0.0330	266	37.59	3.473	3.63
0.0327	264	37.88	4.436	3.33
0.0325	262	38.17	5.024	2.65
0.0322	260	38.46	5.187	1.98
0.0320	258	38.76	5.132	1.48
0.0317	256	39.06	5.005	1.14×10^0
0.0315	254	39.37	4.869	9.03×10^{-1}
0.0312	252	39.68	4.743	7.38
0.0310	250	40.00	4.632	6.18
0.0304	245	40.82	4.414	4.30
0.0298	240	41.67	4.259	3.25
0.0291	235	42.55	4.144	2.58
0.0285	230	43.48	4.056	2.13
0.0279	225	44.44	3.986	1.81
0.0273	220	45.45	3.929	1.56
0.0267	215	46.51	3.882	1.37
0.0260	210	47.62	3.842	1.22
0.0254	205	48.78	3.808	1.10×10^{-1}
0.0248	200	50.00	3.779	9.92×10^{-2}
0.0207	167	60.00	3.651	5.77
0.0177	143	70.00	3.599	4.19
0.0155	125	80.00	3.572	3.34
0.0138	111	90.00	3.555	2.80
0.0124	100	100.00	3.544	2.42

TABLE II (Continued)

Values of n and k for $\text{Al}_{0.44}\text{Ga}_{0.56}\text{As}$ from Various References^a

eV	cm^{-1}	μm	n	k
0.2480	2000	5.00	3.127[3]	
0.2066	1667	6.00	3.122	
0.1771	1429	7.00	3.117	
0.1550	1250	8.00	3.110	
0.1378	1111	9.00	3.102	
0.1240	1000	10.00	3.093	
0.1227	990	10.10	3.092	
0.1215	980	10.20	3.091	
0.1203	970	10.31	3.090	
0.1190	960	10.42	3.089	
0.1178	950	10.53	3.088	
0.1165	940	10.64	3.086	
0.1153	930	10.75	3.085	
0.1141	920	10.87	3.084	
0.1128	910	10.99	3.082	
0.1116	900	11.11	3.081	
0.1103	890	11.24	3.080	
0.1091	880	11.36	3.078	
0.1079	870	11.49	3.076	
0.1066	860	11.63	3.075	
0.1054	850	11.76	3.073	
0.1041	840	11.90	3.071	
0.1029	830	12.05	3.069	
0.1017	820	12.20	3.067	
0.1004	810	12.35	3.065	
0.0992	800	12.50	3.063	
0.0979	790	12.66	3.060	
0.0967	780	12.82	3.058	
0.0955	770	12.99	3.055	
0.0942	760	13.16	3.053	
0.0930	750	13.33	3.050	
0.0917	740	13.51	3.047	
0.0905	730	13.70	3.044	
0.0893	720	13.89	3.040	
0.0880	710	14.08	3.037	
0.0868	700	14.29	3.033	
0.0855	690	14.49	3.029	
0.0843	680	14.71	3.024	
0.0831	670	14.93	3.020	
0.0818	660	15.15	3.015	
0.0806	650	15.38	3.009	
0.0793	640	15.63	3.004	
0.0781	630	15.87	2.997	
0.0769	620	16.13	2.991	
0.0756	610	16.39	2.984	
0.0744	600	16.67	2.976	
0.0731	590	16.95	2.967	
0.0719	580	17.24	2.958	
0.0707	570	17.54	2.948	
0.0694	560	17.86	2.936	

TABLE II (Continued)

$\text{Al}_{0.44}\text{Ga}_{0.56}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0682	550	18.18	2.924	
0.0669	540	18.52	2.910	
0.0657	530	18.87	2.895	
0.0645	520	19.23	2.877	
0.0632	510	19.61	2.857	
0.0620	500	20.00	2.834	
0.0608	490	20.41	2.808	
0.0595	480	20.83	2.777	
0.0583	470	21.28	2.741	
0.0570	460	21.74	2.697	
0.0558	450	22.22	2.642	
0.0555	448	22.32	2.630	
0.0553	446	22.42	2.617	
0.0550	444	22.52	2.603	
0.0548	442	22.62	2.589	
0.0546	440	22.73	2.574	
0.0543	438	22.83	2.558	
0.0541	436	22.94	2.541	
0.0538	434	23.04	2.523	
0.0536	432	23.15	2.504	
0.0533	430	23.26	2.484	
0.0531	428	23.36	2.463	1.07×10^{-2} [3]
0.0528	426	23.47	2.440	1.34
0.0526	424	23.58	2.415	1.64
0.0523	422	23.70	2.389	1.98
0.0521	420	23.81	2.361	2.37
0.0518	418	23.92	2.331	2.81
0.0516	416	24.04	2.298	3.31
0.0513	414	24.15	2.263	3.89
0.0511	412	24.27	2.224	4.57
0.0508	410	24.39	2.182	5.35
0.0506	408	24.51	2.135	6.27
0.0503	406	24.63	2.084	7.37
0.0501	404	24.75	2.027	8.68×10^{-2}
0.0498	402	24.88	1.963	1.03×10^{-1}
0.0496	400	25.00	1.891	1.22
0.0493	398	25.13	1.809	1.47
0.0491	396	25.25	1.715	1.79
0.0488	394	25.38	1.607	2.21
0.0486	392	25.51	1.480	2.79
0.0484	390	25.64	1.331	3.63
0.0481	388	25.77	1.160	4.90
0.0479	386	25.91	0.983	6.84
0.0476	384	26.04	0.844	9.53×10^{-1}
0.0474	382	26.18	0.770	1.26×10^0
0.0471	380	26.32	0.751	1.58
0.0469	378	26.46	0.774	1.91
0.0466	376	26.60	0.832	2.25
0.0464	374	26.74	0.930	2.61
0.0461	372	26.88	1.077	3.01

TABLE II (Continued)

$\text{Al}_{0.44}\text{Ga}_{0.56}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0459	370	27.03	1.297	3.44
0.0456	368	27.17	1.632	3.92
0.0454	366	27.32	2.156	4.43
0.0451	364	27.47	2.984	4.89
0.0449	362	27.62	4.188	5.02
0.0446	360	27.78	5.463	4.43
0.0444	358	27.93	6.135	3.28
0.0441	356	28.09	6.146	2.24
0.0439	354	28.25	5.884	1.55
0.0436	352	28.41	5.578	1.11×10^0
0.0434	350	28.57	5.299	8.23×10^{-1}
0.0431	348	28.74	5.060	6.32
0.0429	346	28.90	4.859	4.99
0.0426	344	29.07	4.689	4.03
0.0424	342	29.24	4.543	3.31
0.0422	340	29.41	4.417	2.76
0.0419	338	29.59	4.307	2.32
0.0417	336	29.76	4.210	1.98
0.0414	334	29.94	4.124	1.69
0.0412	332	30.12	4.046	1.46
0.0409	330	30.30	3.975	1.27
0.0407	328	30.49	3.910	1.10×10^{-1}
0.0404	326	30.67	3.850	9.61×10^{-2}
0.0402	324	30.86	3.793	8.41
0.0399	322	31.06	3.740	7.37
0.0397	320	31.25	3.690	6.47
0.0394	318	31.45	3.642	5.69
0.0392	316	31.65	3.595	5.01
0.0389	314	31.85	3.550	4.42
0.0387	312	32.05	3.506	3.91
0.0384	310	32.26	3.461	3.48
0.0382	308	32.47	3.417	3.12
0.0379	306	32.68	3.372	2.84
0.0377	304	32.89	3.326	2.64
0.0374	302	33.11	3.279	2.52
0.0372	300	33.33	3.229	2.50
0.0369	298	33.56	3.177	2.59
0.0367	296	33.78	3.121	2.83
0.0365	294	34.01	3.060	3.25
0.0362	292	34.25	2.993	3.90
0.0360	290	34.48	2.919	4.89
0.0357	288	34.72	2.834	6.32
0.0355	286	34.97	2.737	8.43×10^{-2}
0.0352	284	35.21	2.623	1.15×10^{-1}
0.0350	282	35.46	2.486	1.63
0.0347	280	35.71	2.320	2.37
0.0345	278	35.97	2.114	3.59
0.0342	276	36.23	1.868	5.75
0.0340	274	36.50	1.628	9.58×10^{-1}
0.0337	272	36.76	1.533	1.52×10^0

TABLE II (Continued)

$\text{Al}_{0.44}\text{Ga}_{0.56}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0335	270	37.04	1.674	2.16
0.0332	268	37.31	2.068	2.79
0.0330	266	37.59	2.770	3.30
0.0327	264	37.88	3.761	3.46
0.0325	262	38.17	4.695	3.03
0.0322	260	38.46	5.156	2.29
0.0320	258	38.76	5.211	1.64
0.0317	256	39.06	5.100	1.20×10^0
0.0315	254	39.37	4.951	9.11×10^{-1}
0.0312	252	39.68	4.808	7.16
0.0310	250	40.00	4.682	5.80
0.0304	245	40.82	4.439	3.80
0.0298	240	41.67	4.271	2.74
0.0291	235	42.55	4.149	2.12
0.0285	230	43.48	4.057	1.70
0.0279	225	44.44	3.985	1.42
0.0273	220	45.45	3.927	1.21
0.0267	215	46.51	3.878	1.04×10^{-1}
0.0260	210	47.62	3.838	9.18×10^{-2}
0.0254	205	48.78	3.803	8.16
0.0248	200	50.00	3.773	7.32
0.0207	167	60.00	3.644	4.09
0.0177	143	70.00	3.591	2.92
0.0155	125	80.00	3.563	2.30
0.0138	111	90.00	3.547	1.92
0.0124	100	100.00	3.535	1.65

TABLE II (Continued)

Values of n and k for $\text{Al}_{0.54}\text{Ga}_{0.46}\text{As}$ from Various References^a

eV	cm^{-1}	μm	n	k
0.2480	2000	5.00	3.088[3]	
0.2066	1667	6.00	3.083	
0.1771	1429	7.00	3.078	
0.1550	1250	8.00	3.071	
0.1378	1111	9.00	3.062	
0.1240	1000	10.00	3.053	
0.1227	990	10.10	3.052	
0.1215	980	10.20	3.051	
0.1203	970	10.31	3.049	
0.1190	960	10.42	3.048	
0.1178	950	10.53	3.047	
0.1165	940	10.64	3.046	
0.1153	930	10.75	3.044	
0.1141	920	10.87	3.043	
0.1128	910	10.99	3.042	
0.1116	900	11.11	3.040	
0.1103	890	11.24	3.039	
0.1091	880	11.36	3.037	
0.1079	870	11.49	3.035	
0.1066	860	11.63	3.033	
0.1054	850	11.76	3.032	
0.1041	840	11.90	3.030	
0.1029	830	12.05	3.028	
0.1017	820	12.20	3.025	
0.1004	810	12.35	3.023	
0.0992	800	12.50	3.021	
0.0979	790	12.66	3.018	
0.0967	780	12.82	3.016	
0.0955	770	12.99	3.013	
0.0942	760	13.16	3.010	
0.0930	750	13.33	3.007	
0.0917	740	13.51	3.004	
0.0905	730	13.70	3.000	
0.0893	720	13.89	2.997	
0.0880	710	14.08	2.993	
0.0868	700	14.29	2.989	
0.0855	690	14.49	2.985	
0.0843	680	14.71	2.980	
0.0831	670	14.93	2.975	
0.0818	660	15.15	2.970	
0.0806	650	15.38	2.964	
0.0793	640	15.63	2.958	
0.0781	630	15.87	2.951	
0.0769	620	16.13	2.944	
0.0756	610	16.39	2.936	
0.0744	600	16.67	2.928	
0.0731	590	16.95	2.919	
0.0719	580	17.24	2.908	
0.0707	570	17.54	2.897	
0.0694	560	17.86	2.885	

TABLE II (Continued)

$\text{Al}_{0.54}\text{Ga}_{0.46}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0682	550	18.18	2.871	
0.0669	540	18.52	2.856	
0.0657	530	18.87	2.839	
0.0645	520	19.23	2.820	
0.0632	510	19.61	2.798	
0.0620	500	20.00	2.772	
0.0608	490	20.41	2.743	
0.0595	480	20.83	2.708	
0.0583	470	21.28	2.667	
0.0570	460	21.74	2.616	
0.0558	450	22.22	2.553	1.10×10^{-2} [3]
0.0555	448	22.32	2.539	1.25
0.0553	446	22.42	2.524	1.41
0.0550	444	22.52	2.508	1.59
0.0548	442	22.62	2.491	1.78
0.0546	440	22.73	2.473	2.00
0.0543	438	22.83	2.454	2.23
0.0541	436	22.94	2.434	2.48
0.0538	434	23.04	2.413	2.77
0.0536	432	23.15	2.391	3.08
0.0533	430	23.26	2.367	3.43
0.0531	428	23.36	2.341	3.81
0.0528	426	23.47	2.313	4.24
0.0526	424	23.58	2.284	4.73
0.0523	422	23.70	2.252	5.27
0.0521	420	23.81	2.218	5.89
0.0518	418	23.92	2.180	6.60
0.0516	416	24.04	2.140	7.41
0.0513	414	24.15	2.096	8.34
0.0511	412	24.27	2.047	9.43×10^{-2}
0.0508	410	24.39	1.994	1.07×10^{-1}
0.0506	408	24.51	1.934	1.23
0.0503	406	24.63	1.868	1.41
0.0501	404	24.75	1.793	1.64
0.0498	402	24.88	1.709	1.92
0.0496	400	25.00	1.612	2.28
0.0493	398	25.13	1.501	2.76
0.0491	396	25.25	1.372	3.41
0.0488	394	25.38	1.224	4.35
0.0486	392	25.51	1.061	5.74
0.0484	390	25.64	0.905	7.76×10^{-1}
0.0481	388	25.77	0.790	1.03×10^0
0.0479	386	25.91	0.728	1.31
0.0476	384	26.04	0.707	1.60
0.0474	382	26.18	0.717	1.90
0.0471	380	26.32	0.753	2.20
0.0469	378	26.46	0.815	2.53
0.0466	376	26.60	0.910	2.88
0.0464	374	26.74	1.047	3.27
0.0461	372	26.88	1.249	3.70

TABLE II (Continued)

$\text{Al}_{0.54}\text{Ga}_{0.46}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0459	370	27.03	1.552	4.20
0.0456	368	27.17	2.028	4.75
0.0454	366	27.32	2.802	5.32
0.0451	364	27.47	4.038	5.69
0.0449	362	27.62	5.623	5.32
0.0446	360	27.78	6.702	4.02
0.0444	358	27.93	6.825	2.66
0.0441	356	28.09	6.500	1.74
0.0439	354	28.25	6.105	1.19×10^0
0.0436	352	28.41	5.751	8.54×10^{-1}
0.0434	350	28.57	5.454	6.35
0.0431	348	28.74	5.208	4.86
0.0429	346	28.90	5.003	3.81
0.0426	344	29.07	4.831	3.04
0.0424	342	29.24	4.684	2.46
0.0422	340	29.41	4.557	2.00
0.0419	338	29.59	4.446	1.65
0.0417	336	29.76	4.348	1.36
0.0414	334	29.94	4.261	1.12×10^{-1}
0.0412	332	30.12	4.183	9.28×10^{-2}
0.0409	330	30.30	4.112	7.63
0.0407	328	30.49	4.047	6.24
0.0404	326	30.67	3.987	5.03
0.0402	324	30.86	3.932	3.99
0.0399	322	31.06	3.880	3.08
0.0397	320	31.25	3.831	2.29
0.0394	318	31.45	3.785	1.58×10^{-2}
0.0392	316	31.65	3.741	9.54×10^{-3}
0.0389	314	31.85	3.699	3.97×10^{-3}
0.0387	312	32.05	3.658	9.83×10^{-4}
0.0384	310	32.26	3.617	5.38×10^{-3}
0.0382	308	32.47	3.578	9.25×10^{-3}
0.0379	306	32.68	3.539	1.26×10^{-2}
0.0376	304	32.89	3.499	1.55
0.0374	302	33.11	3.460	1.78
0.0372	300	33.33	3.419	1.95
0.0369	298	33.56	3.377	2.05
0.0367	296	33.78	3.333	2.07
0.0365	294	34.01	3.286	1.98
0.0362	292	34.25	3.237	1.76
0.0360	290	34.48	3.183	1.36×10^{-2}
0.0357	288	34.72	3.123	7.14×10^{-3}
0.0355	286	34.97	3.057	2.81×10^{-3}
0.0352	284	35.21	2.982	1.78×10^{-2}
0.0350	282	35.46	2.896	4.03
0.0347	280	35.71	2.795	7.45×10^{-2}
0.0345	278	35.97	2.674	1.27×10^{-1}
0.0342	276	36.23	2.531	2.12
0.0340	274	36.50	2.362	3.51
0.0337	272	36.76	2.183	5.86

TABLE II (Continued)

$\text{Al}_{0.54}\text{Ga}_{0.46}\text{As}$				
eV	cm^{-1}	μm	n	k
0.0335	270	37.04	2.056	9.63×10^{-1}
0.0332	268	37.31	2.104	1.46×10^0
0.0330	266	37.59	2.407	1.96
0.0327	264	37.88	2.949	2.30
0.0325	262	38.17	3.606	2.33
0.0322	260	38.46	4.145	2.05
0.0320	258	38.76	4.430	1.64
0.0317	256	39.06	4.514	1.27×10^0
0.0315	254	39.37	4.495	9.91×10^{-1}
0.0312	252	39.68	4.436	7.88
0.0310	250	40.00	4.367	6.42
0.0304	245	40.82	4.208	4.20
0.0298	240	41.67	4.084	3.02
0.0291	235	42.55	3.991	2.32
0.0285	230	43.48	3.919	1.86
0.0279	225	44.44	3.862	1.54
0.0273	220	45.45	3.815	1.30
0.0267	215	46.51	3.775	1.12×10^{-2}
0.0260	210	47.62	3.742	9.82
0.0254	205	48.78	3.713	8.70
0.0248	200	50.00	3.688	7.77
0.0207	167	60.00	3.578	4.26
0.0177	143	70.00	3.532	3.01
0.0155	125	80.00	3.508	2.37
0.0138	111	90.00	3.493	1.96
0.0124	100	100.00	3.483	1.69

^aReferences are indicated in brackets.

TABLE III

Oscillator Parameters Obtained from the Curve Fitting by Using a Factorized Form of a Dielectric Function; ν and γ in cm^{-1}

x	ν_{11}	ν_{11}	γ_{11}	γ_{11}	ν_{12}	ν_{12}	γ_{12}	γ_{12}	ϵ
0.14	267.1	285.7	5.67	4.85	358.8	369.0	10.56	11.31	10.57
0.18	266.9	283.4	8.76	4.24	360.1	372.4	12.20	10.24	10.47
0.30	265.2	278.3	8.64	6.15	360.2	379.1	12.10	9.42	10.16
0.36	264.5	276.5	10.69	5.58	360.4	381.3	12.23	8.08	10.04
0.44	262.9	273.7	10.05	6.44	360.2	385.4	9.55	7.90	9.84
0.54	261.8	269.8	12.43	7.97	361.5	390.1	8.75	8.68	9.60