Лабораторная работа 11.3. Измерение контактной разности потенциалов в полупроводниках.

Дмитрий Норкин 20/03/2019

mV0.05 0.140.42 1.24 2.46 3.68 4.735.425.6 5.835.936.045.955.81 5.73 5.54 5.45.295.19 5.144.984.934.854.824.854.87 4.94 4.42 2.68 1.6 1.4 1.5 1.68 1.931.96

Измерения

U, mV	λ , nm	N	U_n, mV	ϕ, \circ	U, mV	λ , nm	N	U_n ,
14.1	1000.0	46.8	0.3	3500.0	2.29	1000.0	46.8	
50.4	970.0	45.0	1.12	3400.0	6.15	940.0	42.7	
78.0	955.0	44.3	1.76	3350.0	17.5	915.0	42.0	
109.0	940.0	43.6	2.5	3300.0	50.0	885.0	40.2	
135.0	928.0	43.0	3.14	3250.0	95.0	860.0	38.6	
155.0	915.0	42.0	3.69	3200.0	136.0	836.0	37.0	
180.0	885.0	40.2	4.48	3150.0	167.0	808.0	35.3	
181.0	860.0	38.6	4.69	3100.0	182.0	780.0	33.6	
181.0	836.0	37.0	4.89	3050.0	178.0	756.0	31.8	
187.0	808.0	35.3	5.3	3000.0	176.0	748.0	30.2	
189.0	780.0	33.6	5.62	2950.0	169.0	716.0	28.5	
179.0	756.0	31.8	5.63	2900.0	162.0	694.0	26.8	
167.0	748.0	31.3	5.34	2850.0	150.0	680.0	25.2	
145.0	740.0	30.7	4.72	2800.0	137.0	664.0	23.6	
119.0	734.0	30.2	3.94	2750.0	126.0	648.0	22.0	
95.0	730.0	29.9	3.18	2700.0	113.0	634.0	20.4	
61.0	724.0	29.2	2.09	2650.0	101.0	620.0	18.7	
29.1	716.0	28.5	1.02	2600.0	90.0	608.0	17.0	
17.9	705.0	27.6	0.65	2550.0	80.0	598.0	15.4	
14.2	694.0	26.8	0.53	2500.0	71.0	587.0	13.8	
10.8	680.0			2450.0	62.3	576.0	12.5	
8.3	664.0			2400.0	55.7	567.0	11.3	
6.5	648.0	22.0		2350.0	49.5	559.0	10.2	
5.2	634.0	20.4		2300.0	44.3	551.0	9.2	
4.4	620.0			2250.0	39.3	544.0		
3.7	608.0			2200.0	34.6	536.0		
				1500.0	1.57	448.0	0.8	
					T	0.00	10	
		4.0			Табл	тица 2: С	aSe	
0.48	471.0	1.4	0.34					
	14.1 50.4 78.0 109.0 135.0 185.0 180.0 181.0 187.0 189.0 179.0 167.0 145.0 119.0 95.0 61.0 29.1 17.9 14.2 10.8 8.3 6.5 5.2 4.4	14.1 1000.0 50.4 970.0 78.0 955.0 109.0 940.0 135.0 928.0 155.0 915.0 180.0 885.0 181.0 860.0 181.0 836.0 187.0 808.0 189.0 780.0 179.0 756.0 167.0 748.0 145.0 740.0 119.0 734.0 95.0 730.0 61.0 724.0 29.1 716.0 17.9 705.0 14.2 694.0 10.8 680.0 8.3 664.0 5.2 634.0 4.4 620.0 3.7 608.0 3.1 598.0 2.7 587.0 2.3 576.0 1.53 551.0 1.37 544.0 1.25 536.0 1.13 530.0 0.83 509.0 0.68 496.0 <td>14.1 1000.0 46.8 50.4 970.0 45.0 78.0 955.0 44.3 109.0 940.0 43.6 135.0 928.0 43.0 155.0 915.0 42.0 180.0 885.0 40.2 181.0 860.0 38.6 181.0 836.0 37.0 187.0 808.0 35.3 189.0 780.0 33.6 179.0 756.0 31.8 167.0 748.0 31.3 145.0 740.0 30.7 119.0 734.0 30.2 95.0 730.0 29.9 61.0 724.0 29.2 29.1 716.0 28.5 17.9 705.0 27.6 14.2 694.0 26.8 10.8 680.0 25.2 8.3 664.0 23.6 6.5 648.0 22.0 5.2 634.0 20.4 4.4 620.0 18.7 3.7<td>14.1 1000.0 46.8 0.3 50.4 970.0 45.0 1.12 78.0 955.0 44.3 1.76 109.0 940.0 43.6 2.5 135.0 928.0 43.0 3.14 155.0 915.0 42.0 3.69 180.0 885.0 40.2 4.48 181.0 860.0 38.6 4.69 181.0 836.0 37.0 4.89 187.0 808.0 35.3 5.3 189.0 780.0 33.6 5.62 179.0 756.0 31.8 5.63 167.0 748.0 31.3 5.34 145.0 740.0 30.7 4.72 119.0 734.0 30.2 3.94 95.0 730.0 29.9 3.18 61.0 724.0 29.2 2.09 29.1 716.0 28.5 1.02 17.9 705.0 27.6 0.65 14.2 694.0 26.8 0.53 10.8<</td><td>14.1 1000.0 46.8 0.3 3500.0 50.4 970.0 45.0 1.12 3400.0 78.0 955.0 44.3 1.76 3350.0 109.0 940.0 43.6 2.5 3300.0 135.0 928.0 43.0 3.14 3250.0 155.0 915.0 42.0 3.69 3200.0 180.0 885.0 40.2 4.48 3150.0 181.0 860.0 38.6 4.69 3100.0 181.0 836.0 37.0 4.89 3050.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 740.0 31.8 5.63 2950.0 179.0 756.0 31.8 5.63 2950.0 145.0 740.0</td><td>14.1 1000.0 46.8 0.3 3500.0 2.29 50.4 970.0 45.0 1.12 3400.0 6.15 78.0 955.0 44.3 1.76 3350.0 17.5 109.0 940.0 43.6 2.5 3300.0 50.0 135.0 928.0 43.0 3.14 3250.0 95.0 155.0 915.0 42.0 3.69 3200.0 136.0 180.0 885.0 40.2 4.48 3150.0 167.0 181.0 860.0 38.6 4.69 3100.0 182.0 187.0 808.0 35.3 5.3 3000.0 176.0 189.0 780.0 33.6 5.62 2950.0 169.0 179.0 756.0 31.8 5.63 2900.0 162.0 167.0 748.0 31.3 5.34 2850.0 137.0 145.0 740.0 30.7 4.72 2800.0 137.0 145.0</td><td>14.1 1000.0 46.8 0.3 3500.0 2.29 1000.0 50.4 970.0 45.0 1.12 3400.0 6.15 940.0 78.0 955.0 44.3 1.76 3350.0 17.5 915.0 109.0 940.0 43.6 2.5 3300.0 50.0 885.0 135.0 928.0 43.0 3.14 3250.0 95.0 860.0 155.0 915.0 42.0 3.69 3200.0 136.0 836.0 180.0 885.0 40.2 4.48 3150.0 167.0 808.0 181.0 860.0 38.6 4.69 3100.0 182.0 780.0 187.0 808.0 35.3 5.3 3000.0 176.0 748.0 187.0 780.0 33.6 5.62 2950.0 169.0 716.0 187.0 780.0 33.6 5.62 2950.0 169.0 716.0 187.0 748.0 31.3 5.34 2850.0 150.0 680.0 187.0 748.0 3</td><td>14.1 1000.0 46.8 0.3 3500.0 2.29 1000.0 46.8 50.4 970.0 45.0 1.12 3400.0 6.15 940.0 42.7 78.0 955.0 44.3 1.76 3350.0 17.5 915.0 42.7 109.0 940.0 43.6 2.5 3300.0 50.0 885.0 40.2 135.0 928.0 43.0 3.14 3250.0 95.0 860.0 38.6 155.0 915.0 42.0 3.69 3200.0 136.0 836.0 37.3 180.0 885.0 40.2 4.48 3150.0 167.0 808.0 35.3 181.0 860.0 38.6 4.69 3100.0 182.0 780.0 33.6 181.0 836.0 37.0 4.89 3050.0 176.0 780.0 33.6 181.0 836.0 35.3 5.3 3000.0 176.0 748.0 30.2 189.0 780.0 33.6 5.62 2950.0 169.0 716.0 28.5 <tr< td=""></tr<></td></td>	14.1 1000.0 46.8 50.4 970.0 45.0 78.0 955.0 44.3 109.0 940.0 43.6 135.0 928.0 43.0 155.0 915.0 42.0 180.0 885.0 40.2 181.0 860.0 38.6 181.0 836.0 37.0 187.0 808.0 35.3 189.0 780.0 33.6 179.0 756.0 31.8 167.0 748.0 31.3 145.0 740.0 30.7 119.0 734.0 30.2 95.0 730.0 29.9 61.0 724.0 29.2 29.1 716.0 28.5 17.9 705.0 27.6 14.2 694.0 26.8 10.8 680.0 25.2 8.3 664.0 23.6 6.5 648.0 22.0 5.2 634.0 20.4 4.4 620.0 18.7 3.7 <td>14.1 1000.0 46.8 0.3 50.4 970.0 45.0 1.12 78.0 955.0 44.3 1.76 109.0 940.0 43.6 2.5 135.0 928.0 43.0 3.14 155.0 915.0 42.0 3.69 180.0 885.0 40.2 4.48 181.0 860.0 38.6 4.69 181.0 836.0 37.0 4.89 187.0 808.0 35.3 5.3 189.0 780.0 33.6 5.62 179.0 756.0 31.8 5.63 167.0 748.0 31.3 5.34 145.0 740.0 30.7 4.72 119.0 734.0 30.2 3.94 95.0 730.0 29.9 3.18 61.0 724.0 29.2 2.09 29.1 716.0 28.5 1.02 17.9 705.0 27.6 0.65 14.2 694.0 26.8 0.53 10.8<</td> <td>14.1 1000.0 46.8 0.3 3500.0 50.4 970.0 45.0 1.12 3400.0 78.0 955.0 44.3 1.76 3350.0 109.0 940.0 43.6 2.5 3300.0 135.0 928.0 43.0 3.14 3250.0 155.0 915.0 42.0 3.69 3200.0 180.0 885.0 40.2 4.48 3150.0 181.0 860.0 38.6 4.69 3100.0 181.0 836.0 37.0 4.89 3050.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 740.0 31.8 5.63 2950.0 179.0 756.0 31.8 5.63 2950.0 145.0 740.0</td> <td>14.1 1000.0 46.8 0.3 3500.0 2.29 50.4 970.0 45.0 1.12 3400.0 6.15 78.0 955.0 44.3 1.76 3350.0 17.5 109.0 940.0 43.6 2.5 3300.0 50.0 135.0 928.0 43.0 3.14 3250.0 95.0 155.0 915.0 42.0 3.69 3200.0 136.0 180.0 885.0 40.2 4.48 3150.0 167.0 181.0 860.0 38.6 4.69 3100.0 182.0 187.0 808.0 35.3 5.3 3000.0 176.0 189.0 780.0 33.6 5.62 2950.0 169.0 179.0 756.0 31.8 5.63 2900.0 162.0 167.0 748.0 31.3 5.34 2850.0 137.0 145.0 740.0 30.7 4.72 2800.0 137.0 145.0</td> <td>14.1 1000.0 46.8 0.3 3500.0 2.29 1000.0 50.4 970.0 45.0 1.12 3400.0 6.15 940.0 78.0 955.0 44.3 1.76 3350.0 17.5 915.0 109.0 940.0 43.6 2.5 3300.0 50.0 885.0 135.0 928.0 43.0 3.14 3250.0 95.0 860.0 155.0 915.0 42.0 3.69 3200.0 136.0 836.0 180.0 885.0 40.2 4.48 3150.0 167.0 808.0 181.0 860.0 38.6 4.69 3100.0 182.0 780.0 187.0 808.0 35.3 5.3 3000.0 176.0 748.0 187.0 780.0 33.6 5.62 2950.0 169.0 716.0 187.0 780.0 33.6 5.62 2950.0 169.0 716.0 187.0 748.0 31.3 5.34 2850.0 150.0 680.0 187.0 748.0 3</td> <td>14.1 1000.0 46.8 0.3 3500.0 2.29 1000.0 46.8 50.4 970.0 45.0 1.12 3400.0 6.15 940.0 42.7 78.0 955.0 44.3 1.76 3350.0 17.5 915.0 42.7 109.0 940.0 43.6 2.5 3300.0 50.0 885.0 40.2 135.0 928.0 43.0 3.14 3250.0 95.0 860.0 38.6 155.0 915.0 42.0 3.69 3200.0 136.0 836.0 37.3 180.0 885.0 40.2 4.48 3150.0 167.0 808.0 35.3 181.0 860.0 38.6 4.69 3100.0 182.0 780.0 33.6 181.0 836.0 37.0 4.89 3050.0 176.0 780.0 33.6 181.0 836.0 35.3 5.3 3000.0 176.0 748.0 30.2 189.0 780.0 33.6 5.62 2950.0 169.0 716.0 28.5 <tr< td=""></tr<></td>	14.1 1000.0 46.8 0.3 50.4 970.0 45.0 1.12 78.0 955.0 44.3 1.76 109.0 940.0 43.6 2.5 135.0 928.0 43.0 3.14 155.0 915.0 42.0 3.69 180.0 885.0 40.2 4.48 181.0 860.0 38.6 4.69 181.0 836.0 37.0 4.89 187.0 808.0 35.3 5.3 189.0 780.0 33.6 5.62 179.0 756.0 31.8 5.63 167.0 748.0 31.3 5.34 145.0 740.0 30.7 4.72 119.0 734.0 30.2 3.94 95.0 730.0 29.9 3.18 61.0 724.0 29.2 2.09 29.1 716.0 28.5 1.02 17.9 705.0 27.6 0.65 14.2 694.0 26.8 0.53 10.8<	14.1 1000.0 46.8 0.3 3500.0 50.4 970.0 45.0 1.12 3400.0 78.0 955.0 44.3 1.76 3350.0 109.0 940.0 43.6 2.5 3300.0 135.0 928.0 43.0 3.14 3250.0 155.0 915.0 42.0 3.69 3200.0 180.0 885.0 40.2 4.48 3150.0 181.0 860.0 38.6 4.69 3100.0 181.0 836.0 37.0 4.89 3050.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 808.0 35.3 5.3 3000.0 187.0 740.0 31.8 5.63 2950.0 179.0 756.0 31.8 5.63 2950.0 145.0 740.0	14.1 1000.0 46.8 0.3 3500.0 2.29 50.4 970.0 45.0 1.12 3400.0 6.15 78.0 955.0 44.3 1.76 3350.0 17.5 109.0 940.0 43.6 2.5 3300.0 50.0 135.0 928.0 43.0 3.14 3250.0 95.0 155.0 915.0 42.0 3.69 3200.0 136.0 180.0 885.0 40.2 4.48 3150.0 167.0 181.0 860.0 38.6 4.69 3100.0 182.0 187.0 808.0 35.3 5.3 3000.0 176.0 189.0 780.0 33.6 5.62 2950.0 169.0 179.0 756.0 31.8 5.63 2900.0 162.0 167.0 748.0 31.3 5.34 2850.0 137.0 145.0 740.0 30.7 4.72 2800.0 137.0 145.0	14.1 1000.0 46.8 0.3 3500.0 2.29 1000.0 50.4 970.0 45.0 1.12 3400.0 6.15 940.0 78.0 955.0 44.3 1.76 3350.0 17.5 915.0 109.0 940.0 43.6 2.5 3300.0 50.0 885.0 135.0 928.0 43.0 3.14 3250.0 95.0 860.0 155.0 915.0 42.0 3.69 3200.0 136.0 836.0 180.0 885.0 40.2 4.48 3150.0 167.0 808.0 181.0 860.0 38.6 4.69 3100.0 182.0 780.0 187.0 808.0 35.3 5.3 3000.0 176.0 748.0 187.0 780.0 33.6 5.62 2950.0 169.0 716.0 187.0 780.0 33.6 5.62 2950.0 169.0 716.0 187.0 748.0 31.3 5.34 2850.0 150.0 680.0 187.0 748.0 3	14.1 1000.0 46.8 0.3 3500.0 2.29 1000.0 46.8 50.4 970.0 45.0 1.12 3400.0 6.15 940.0 42.7 78.0 955.0 44.3 1.76 3350.0 17.5 915.0 42.7 109.0 940.0 43.6 2.5 3300.0 50.0 885.0 40.2 135.0 928.0 43.0 3.14 3250.0 95.0 860.0 38.6 155.0 915.0 42.0 3.69 3200.0 136.0 836.0 37.3 180.0 885.0 40.2 4.48 3150.0 167.0 808.0 35.3 181.0 860.0 38.6 4.69 3100.0 182.0 780.0 33.6 181.0 836.0 37.0 4.89 3050.0 176.0 780.0 33.6 181.0 836.0 35.3 5.3 3000.0 176.0 748.0 30.2 189.0 780.0 33.6 5.62 2950.0 169.0 716.0 28.5 <tr< td=""></tr<>

Таблица 1: CdS

459.0

1.0

0.42

1600.0

0.42

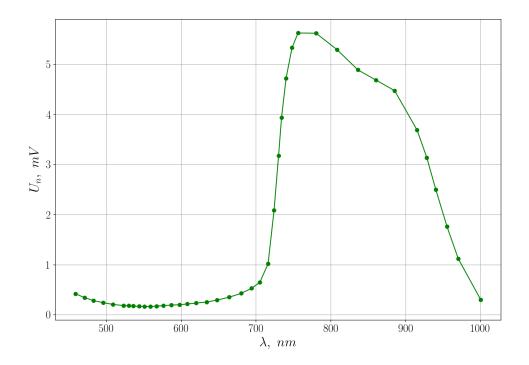


Рис. 1: CdS

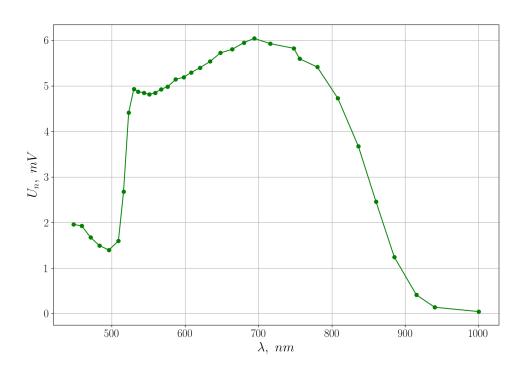


Рис. 2: CdSe