

New Lines in the Near-Infrared Spectrum of the Neutral Hg Atom

Thirty-nine new lines have been observed in the region 0.9μ to 2.25μ with an automatic recording spectrograph¹ of the Littrow type using the equivalent of five 60° prisms. The lines are extremely weak so that an effective slit-width of approximately 15 A° was necessary for detection with a single junction ther-

Research Tokyo, Sci. Papers No. 232, March 20, 1930). All the lines in the region 0.9 to 1.0μ , observed photographically by Takamine and Suga were discernible, and the line at 0.940μ resolves into two, 0.9432 and 0.9447μ . The line at $2.108\mu \pm 10^{-3}$ is of the same intensity as the one 2.2489μ observed by F. Pas-

No.	New HgI Lines and λ	Possible Classification. ν	Classification
1	0.9253	10807.3	
2	0.9432	10602.2	$2^1P_1 - 6^1D_1 = 10600$
3	0.9447	10585.4	$2^1P_1 - 6^3P_2 = 10581$
4	0.9697	10312.4	
5	0.9774	10231.0	$2^3P_0 - 2^1F = 10231$
6	0.9780	10225.0	$2^3P_0 - 2^3F = 10227$
7	0.9918	10083.0	$2^1D_1 - 5^3S_1 = 10083$
8	0.9983	10017.	$2^3P_1 - 4^3D_1 = 10016$
9	1.0211	9793.3	
10	1.0240	9765.6	$2^1P_1 - 5^1D_1 = 9764$
11	1.0276	9731.4	$2^1P_1 - 5^3P_2 = 9730$
12	1.0294	9714.4	$2^3P_1 - 4^3P_0 = 9713$
13	1.0307	9702.1	
14	1.0361	9651.5	$2^3D_3 - 5^3D_3 = 9654$
15	1.0436	9582.2	$2^1D_1 - 5^3P_1 = 9583$
16	1.1008	9084.3	
17	1.1018	9076.0	$2^3S_1 - 9^3P_1 = 9078$
18	1.1036	9061.2	$2^3P_2 - 4^3S_1 = 9060$
19	1.1129	8985.5	$1^3S_1 - 2^3D_1 = 8986$
20	1.1363	8800.4	$2^3S_1 - 8^3P_1 = 8805?$
21	1.1433	8746.6	
22	1.1790	8481.7	$2^3P_2 - 4^3D_2 = 8482$
23	1.1916	8392.1	$2^1P_1 - 4^3D_2 = 8397?$
24	1.2193	8201.4	$^3P_2 - 3^3D_1 = 8200^2$
25	1.2224	8180.6	$2^3D_2 - 4^3P_2 = 8180$
26	1.2376	8080.1	$2^1P_1 - 4^3P_0 = 8082$
27	1.2440	8038.5	$2^3D_1 - 4^3P_0 = 8039$
28	1.3634	7334.3	
29	1.3979	7153.6	$2^3P_1 - 3^3P_2 = 7161?$
30	1.4027	7129.1	
31	1.4127	7078.6	$2^1D_1 - 4^1S_0 = 7068?$
32	1.4160	7062.1	$2^3S_1 - 5^3P_2 = 7062$
33	1.7269	5790.7	$2^1P_1 - 3^3D_1 = 5791$
34	1.7696	5651.0	$3^3P_1 - 6^3S_1 = 5656?$
35	1.7980	5561.7	$3^3F - 8^1D_1 = 5563$
36	1.8084	5529.7	$2^1P_1 - 3^3P_2 = 5530$
37	1.9481	5133.2	$2^1D_1 - 3^3P_1 = 5134$
38	1.9571	5109.6	$2^3D_1 - 3^3P_0 = 5110$
39	2.1080	4744	$2^3P_1 - 3^1S_0 = 4742$

¹ Constructed by E. D. McAlister, Smithsonian Institute.

² Takamine's x -term given by F. Paschen as a 3P_2 -term that may assume two different values.

mocouple. The intensities of these lines are of the order of 0.002 that of the strong line at 1.0142μ , which gave a 45 cm scale deflection at 4 meters. The arc was operated at 86 volts and 3.8 amperes.

Wave-length standards were taken from E. D. McAlister's report (Phys. Rev. **34**, 1142-1147, Oct. 15, 1929) and T. Takamine's and T. Suga's report (Inst. Phys. and Chem.

chen, and the wave-length uncertainty is due to the fact that the nearest known line is 1300A away.

This brings the number of lines in this spectral region, 0.90 to 2.25μ , to a total of 96.

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