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NOTES

Temperature Effect on Refractive Index and Density of Pancaguna Taila

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In the present communication the relationship between density and refractive index, and the effect of temperature on density and refractive indices of Pancaguna Taila have been discussed.

In continuation of our earlier work on Pancaguna Taila[1–3], we report in the present paper the effect of temperature on density and refractive index and also determined the iodine value (Iv), sp. refraction (rD), molar specific refraction (MrD), empirical Eykman value (EEV), polarizability (α), radius (r), dipole moment (μ) and double bond (Db) values by different equations[4] on different temperatures. These values are very useful in the bio-sciences, analytical and technical.

Pancaguna Taila was prepared in our pharmacy section. Density and refractive index values have been determined by density bottle and Abbe's refractometer, respectively (Table 1).

TABLE 1
EFFECT OF TEMPERATURE ON REFRACTIVE INDEX AND DENSITY OF PANCAGUNA TAILA

Temp. K	Density g ml^{-1}	nD	EEV	rD	r Å	μ $\times 10^4$	α $\times 10^{24}$	Db	Iv(Cal)
1	2	3	4	5	6	7	8	9	10
273	0.9525	1.4869	0.674	0.3019	3.844	—	56.81	3.405	255.62
293	0.9433	1.4842	0.676	0.3034	3.846	1.55	56.90	3.325	249.62
298	0.9412	1.4825	0.676	0.3032	3.844	2.82	56.83	2.902	217.84
303	0.9390	1.4800	0.674	0.3025	3.840	4.84	56.63	2.616	196.37
308	0.9364	1.4787	0.675	0.3027	3.840	6.21	56.61	2.467	185.20
313	0.9332	1.4750	0.673	0.3017	3.832	9.63	56.25	2.044	153.43

nD = refractive index, EEV = emprical Eykman value, rD = specific refraction, μ = dipole moment, α = polarizability, Db = double bond, Iv(Cal) = calculated iodine value, r = radius, Å (Angstrom unit = 10^{-8} cm), K = absolute zero.

Refractive indices, density, double bond values and iodine values are found to decrease as the temperatures increase, may be the formation of unsaturations, which were taken to be heat-induced surface polymerization[5]. Temperature has no effect on the radius of molecules. Constant emprical Eykman values support the mole accuracy of groups oı elements for the compounds of Pancaguna Taila[4]. Approximate constant values of empirical Eykman and specific refraction are independent of temperature and pressure[6].

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