The Discovery and Measurement of Black Light as Negative Radiation

Negative radiation is formulated as the frequencies between the predicted quantum-squared subdivision of the Rydberg root frequency and the highest actual series frequency produced by the negation of that subdivision (always "n'=8"):

Rydberg Formula for Hydrogen Radiation Emissions: Root Wavelength=91.14 nm

$$\text{frequency} = f = \left(\frac{1}{n^2} - \frac{1}{n'^2} \right)(\text{root frequency}) \quad ; \; 1 \le n \le 7 \; ; \; (n+1) \le n' \le 8$$

$$\text{Negative radiation frequency} = \frac{(\text{root frequency})}{n^2}$$

$$\text{Closest actual series frequency} = \left(\frac{1}{n^2} - \frac{1}{8^2} \right)(\text{root frequency})$$

This formulation has identified an N-radiation frequency as "black light" which causes some organic molecules to fluoresce. That N-radiation wavelength is:

Negative Radiation Wavelength for "n=2"

$$\text{frequency of light} = \frac{C}{\lambda} \quad ; \; C = \text{speed of light} \; ; \; \lambda = \text{wavelength of light}$$

$$\text{root frequency} = \frac{C}{\lambda_r} \quad ; \; \lambda_r = \text{root wavelength} = 91.14 \text{ nanometers (nm)}$$

$$(\text{Negative radiation frequency for } "n=2") = \frac{C}{\lambda} = \frac{C/\lambda_r}{2^2} = \frac{C}{\lambda_r (2^2)}$$

$$\lambda = \lambda_r (2^2) = (91.14 \text{ nm})(2^2) = 364.56 \text{ nm} = \text{black light}$$

For ease of communication, "364.56 nm" is rounded up to "365 nm." The wavelength "365 nm" is soft ultraviolet and is just outside the visible light range. Not being directly visible, it is known as "black light." 365 nm black light causes some organic-based materials like cloth, plastics and paper to fluoresce. Florescence is a "return glow" stimulated by the invisible black light. This florescence is always a lower frequency than the black light and is within the visible range of frequencies. The visible florescence frequency band is the Rydberg distribution for "n=2." (Balmer Series):

$$\text{florescence frequencies} = \text{Balmer Series} = \left(\frac{1}{2^2} - \frac{1}{n'^2} \right) \frac{C}{\lambda_r} < \frac{C/\lambda_r}{2^2} \; (black\ light)$$

Florescence frequencies always negate the black light frequency by subtracting "$1/n'^2$."
This drops them into the visible light range.

365 nm black light falls just outside the range of visible light frequencies; it falls on the "2^2" subdivision of the root frequency; the "2^2" subdivision cannot be acquired by the Rydberg distribution for the visible frequencies of Hydrogen light which are all "negations of the 2^2 subdivision." The black light "2^2" subdivision of the root frequency stimulates hydrogen bonded organic molecules to fluoresce or produce a "return glow" of light. The florescent frequencies are all lower than the black light frequency and within the range of visible light included in the Rydberg's "n=2 Balmer Series" of Hydrogen emissions.

.N-radiation was predicted to exist in the frequency gaps between the subdivisions of the root frequency and the Rydberg formula for the negation of those subdivisions. The quantum "string model" of the electron/proton bond predicts that the "string" can only impede or absorb black-light frequency in the negative energy phase of the wave. This means that the nucleus of the molecule must fund the "string" with its own energy in order to absorb the black light. That energy is being output as florescence which is accompanied by a loss of nuclear temperature. The expenditure of nuclear energy is measured by a drop in molecular temperature. Thus black light is negative or "cold" radiation.

Black light had never been tested as "N-radiation," although it has all the surface characteristics of a negative frequency. In the first place, hydrocarbon "glow" cannot be reflected radiation. Glowing hydrocarbons reproduce none of the color characteristics of the ultraviolet black light. Further, the "glow" partially illuminates. Hydrocarbon "glow" illuminates details of objects within its immediate vicinity. It is an actual light emission, not a reflection, although the "glow" is much softer and less intense than would be the case if the material were heated in a vacuum until it emitted light. This "ghost light" is obviously not a conventional light emission.

Finally, brilliance of color is irrelevant to the absorption of black light. Brilliant white non-organic pigments of paint do not glow, yet less brilliant whites of cotton and polyethylene do. Normal color reflexivity has been replaced by material composition in determining light output.

A series of test of hydrocarbons which "glowed" under black light illumination confirmed this conclusion. Using a sensitive infrared thermometer, all absorbing materials were discovered to possess two temperatures; a "glow" temperature and a dropping body temperature underneath the glow. The "glow" temperature was a consistent 1-2 degrees or so above pre-irradiation body temperature of the cotton. The body temperature fell from pre-irradiation temperature at a measurable rate per second. Obviously, the "glow" was radiating off body heat at a consistent rate. Black light as Balmer Series N-radiation was fully confirmed.

It was significant that hydrocarbons, not inorganic molecules, were the primary absorbers of N-radiation. The theory of N-radiation was built upon the Rydberg frequency distribution which itself was built upon the hydrogen atom. The Rydberg formula describes the distribution of frequencies for the single electron of hydrogen. Rydberg frequencies are the absorption spectrographics for hydrogen.

Black light is a hydrogen sensitive form of N-radiation. It was no accident that hydrogen bonded organic molecules were absorbing it.

Since the glowing hydrocarbons were radiating off temperature at a fixed rate, it was important to discover what that rate might be. Cotton was chosen to conducted tests of the rate of energy exchange(by measured temperature drop) between the nucleus and the hydrogen electron bonds which were presumed to be emitting the glow.

Natural cotton was chosen because it has an easily identified molecular structure, unlike the man-made hydrocarbons which were also being tested.

Under carefully controlled ambient temperature conditions[1] , drops in irradiated cotton body

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[1] Tests were conducted only under condition that both external heat sources and air conditioning were not contributing to ambient temperature change. The twilight at sunset provided the best control.

temperature was simultaneously monitored by the current writer and a lab technician[2] . These temperature drops were time stamped, giving a "per second" mean rate of temperature drop. It was this mean rate temperature drop per second which was used in analyzing the data.

The results were completely unanticipated. When the measured temperature drop was calculated for the energy lost per hydrogen bond, the calculation resolved to Planck's Constant with an accuracy which disallowed any reasonable probability of coincidence. The resolution of correlation between Planck's Constant and measured results was ten times as great as Niels Bohr had accepted in his calculation for electron voltage. Bohr had allowed 7% variance between calculations and Planck's Constant. Our variation between calculations and Planck's Constant was six tenths of 1%. It is about the same variation obtained by Robert Millikan in 1916, the most accurate derivation of the time.[3] Millikan's highly acclaimed accuracy was five tenths of 1%, an accuracy which the n-radiation study of cotton duplicated.

The energy being exchanged between the "glowing" electrons and the nucleus was a function of Planck's Constant. All room for doubt is eliminated by the accuracy of the correlation between the Constant and the measurements.

That correlation showed that the nucleus was funding the glow of each bond at the rate of frequency energy minus the frequency— which resolves itself exactly to Planck's Constant. The "glow" of N-irradiated cotton is not as great as would be the radiation emitted from the same cotton heated "white hot." The difference explains the pale, "ghost light" appearance of black-light induced radiation.

That difference is the frequency factor. The nuclei of heated cotton contribute their energy to electron light emissions positively. The energy contributed to positive light emissions is Planck's Constant *times* frequency. The nuclei of N-irradiated cotton contribute their energy to electron light emissions negatively. The energy lost to light emissions is Planck's formula for light energy *minus* the frequency of the light. Heated cotton light is brighter because the emission energy is Planck's Constant *times* frequency. N-irradiated cotton light is duller because the emissions energy is Planck's Constant *times* a frequency of "1."

The significance of this should not be underestimated. Negative radiation stimulates the subtraction of energy from the nucleus to fund a "ghost light." That "ghost light" is a measure of a changing energy balance between the electron field and the nucleus.

The Results
Cotton Irradiated by Black Light at 30 Centimeters, Temperature Measured by IR thermometer from 15 Centimeters

Black light wave length $\approx$365 nm.($2^2\lambda_r$ or subdivision of root frequency)
Rydberg highest visible frequency (Balmer Series):

$$\frac{1}{\lambda} = \left(\frac{1}{2^2} - \frac{1}{8^2}\right)\frac{1}{\lambda_r}$$

$\lambda = 388.86$ nm

Temperature	Time (min.second)
73.5	7.01
73.1	7.11

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[2] Jonathan Dawson assisted in all tests.

[3] *A Direct Photoelectric Determination of Planck's "h"*; R. A. Millikan;   Phys. Rev. 7, 355 (issue of March 1916)

72.8	7.37
72.7	8.13
72.5	8.2
72.3	8.36
72	8.51
71.8	9.22
71.6	9.32
71.4	10.20
71.1	10.21
70.9	11.31
70.7	11.33

Temperature dropped 2.8° F in 4 min. 32 second
Average change in temperature 0.0102941176 degrees F per second=0.0057189542 Celsius per second.   Celsius = F/1.8

239 joules per second = 57.34 Calories per second; Calorie= (1 kg)(1°c/sec)

$$x = \frac{57.34}{.001x} \; ; x^2 = 57340 \; ; x = 239.4577206941 \; conversion \; proof$$

cotton is polymer of $(C_6 H_{10} O_5)_n$ n=6
60 hydrogen atoms=60 nuclear units (nuclear unit=proton or neutron)
30 oxygen=480 nuclear units
36 carbon atoms=432 nuclear units

Quantum molecular number=N_m=972 nuclear units
Number of hydrogen bonds(valence electron strings)=n_s=60

Each hydrogen string is "carrying" the weight of 16.2 nuclear units (N_m/n_s) in cotton molecule for a total mass of 16.2 *times* mass of proton (Quantum molecular number./Number of hydrogen bonds).
      Mass of proton=1.6726e−27 kilograms
$$\text{watt=joules/sec.} = \frac{57.34}{239} kg \frac{\Delta 1°}{sec}$$

W_s = watts per valence string ; ΔTemp. = change centigrade

$$W_s = \frac{57.34 \ (\text{mass proton})N_m}{239}\left(\frac{\Delta\text{Temp}/\sec}{n_s}\right)$$

$$= \frac{57.34\left(1.6726 \ 10^{-27} \ \text{kilograms}\right)(972)}{239}\left(\frac{\left(-0.0057189542° \ c/\sec\right)}{60}\right)$$

$$W_s = -(57.34)\left(6.4837434844 \ 10^{-31}\right) \text{watts}$$

Size of molecule can be factored out, remaindering Planck's Constant as a function of the change in temperature per hydrogen bond.

57.34 = caloric factor ; N_m = number nuclear units (protons + neutrons)

$$\frac{W_s}{(57.34)N_m} = 6.6705179881\text{e-}34/\sec \cong \text{Planck's Constant}/\sec = h/\sec$$

Proof:

$$\frac{W_s/(57.34)N_m}{h/\sec} = 1.0067 \quad \textbf{\textit{Experimental data derives Planck with .0067 variance}}$$

$$h/\sec = \frac{(\text{mass proton})}{239}\left(\frac{\Delta\text{Temp}/\sec}{n_s}\right)$$

$$\Delta\text{Temp}/\sec = \frac{239 \ n_s(h)}{(\text{mass proton})\sec}$$

Plank's Constant (h)=6.6260755e-34 Joules

Change in temperature is completely a function of the number of hydrogen bonds "n_s." The total change in temperature for the irradiated cotton (temperature factored for Joules, not Calories) is a function of Planck's Constant *times* the number of hydrogen bonds "n_s."

$$\Delta\text{Temp}/\sec = n_s\left(239\frac{\text{Planck's Constant}}{\text{mass proton}}\right)$$

The size of the molecule is completely irrelevant to the change in temperature. Only the number of hydrogen bonds and Planck's Constant determine temperature change. Further, the n-radiation frequencies which stimulate return florescence are also irrelevant to this loss of temperature. Only the number of bonds, not the frequency which stimulates the florescence temperature drop, will determine what the change in temperature will be.

The significance of these findings cannot be overstated. Energy from the nucleus is funding the return florescence at the rate of Planck's Constant per hydrogen bond:

$$\text{Planck's Constant}/\sec = 6.6260755\text{e-}34\,\text{Joules}/\sec = \frac{(-\Delta\text{Temp}/\sec)(\text{mass proton})}{239 \ n_s}$$

$E = f(\text{mass}(\Delta\text{Temp}))$ *Standard formula for thermal energy*

Planck's Constant *per* second is determined to be the rate at which energy is being

exchanged between the nucleus and the hydrogen-bond electrons which are free to acquire the subshell orbitals needed to fluoresce. The energy *per* second in this return florescence is Planck's Constant *times* the number of molecular hydrogen bonds, "n_s." This amount of energy is being subtracted from the nucleus to be supplied to the florescence. The N-radiation study has identified Planck's Constant as the energy exchange rate between the nucleus and the electron shell.

$$(\text{nucleus}) \xleftarrow{\text{Energy exchange}=h=\text{Planck's Constant}} (\text{electron in its subshell orbital})$$

Converstion Watts to BTU/sec

$$\text{molecular watts} = W_m = \frac{57.34 \; (\text{mass proton kg})N_n}{239} (\Delta°\text{Centigrade} / sec)$$

$$BTU / sec = \text{lb.}(\Delta°F / sec)$$

$$2.205 \; \text{lb} = 1 \; \text{kg.} \quad ; \; 1.8° \; \text{Fahrenheit} = 1° \; \text{Celsius}$$

$$\frac{BTU}{sec(2.205)(1.8)} \frac{57.34}{239} = \frac{BTU}{sec}(0.060447548) = W$$

$$\frac{BTU}{sec} = W_m (16.5432682246)$$

Predicted Change in Temperature for Pasco Poly Tanks
(mathematically determined 820 nm N-Radiation for H_2O)

$$\frac{\Delta T(H-O-H)}{sec} = \frac{239 \; n_s(-h)}{(\text{mass proton})\,sec} = \frac{239 \; (2)(-6.6260755e\text{-}34)}{(1.6726e\text{-}27 \; \text{kilograms})\,sec} = -\frac{\textbf{1. 2270639302° F}}{\textbf{hour}}$$

The above figure "-1.23° F per hour" has been empirically confirmed as the approximate cooling rate of the Pasco Poly wine tanks over many observations.