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Review Article

528 Frequency: The "Gold Standard" in Energy Medicine

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Abstract

Gold and Silver nanocrystals (AuNCs and AgNCs, respectively) have emerged as a popular frontier in nanotechnology and energy medicine due to their unique surface plasmonic resonance (SPR). Similar to how other materials in quantum information processing store and transmit optical and/or acoustic data, AuNCs and AgNCs work likewise. Specifically, gold superconductive nanocrystals (SNCs) have been determined to energetically resonate uniquely at 528 frequency of light (nm) and sound (Hz). This determination perfectly correlates with newly discovered Solfeggio musical scale tones associated with the Nobel metals, gold and silver. Such nanocrystals can be used to superconduct energy, exceptionally well in structured water solutions, to impart therapeutic benefits. These determinations advance clinical practices in energy medicine, natural healing, and frequency therapeutics; and compound earlier 'game-changing' discoveries that enable the development of novel diagnostic and therapeutic products and services. This paper reviews these advancements presenting a 'new paradigm' in the healing arts and sciences.

Keywords: Surface Plasmonic Resonance (SPR); Light; Sound

Introduction and Background

528 frequency resonance was introduced in contemporary health science and clinical practice in 1998 by this author based on revelations in the book, *Healing Codes for the Biological Apocalypse* [1]. Therein, a Bible Code decryption was advanced by Idaho naturopath, Dr. Joseph Puleo. Therein, 528 repeatedly appeared in an extraordinary passage in the Book of Numbers, Chapter 7, Verses 12 through 83. This section of the Bible provides a repeating series of verses that decrypt into the six notes of the ancient original Solfeggio musical scale. That scale reportedly produced the most spiritually uplifting and therapeutic benefits known to Catholicism chanted in the Hymn to St. John the Baptist. Therein, "MI" (short for "Mira Gestorum" in Latin and "Miracles" in English) is characterized as the "gold offering" in that "5-2-8" verse numbered Bible sequence [1].

With curiosity raised, this author continued researching 528 and discovered that the audible frequency of 528Hz: (1) must be the "key of the house of David" by which King David tuned his therapeutic "healing harp" (Isaiah 22:22; Rev. 3: 6-9); (2) provides "The Key" fundamental to quantum biophysics and natural healing. That is, a "Key" metaphysical energetic endowment deciphered using the ancient Hebrew letter/number gematria conversion system. That decryption, using the letter/number conversion system, precisely identifies 528 as "The Key" (i.e., 'MemPeTavChet,' written "חֵתְפֵמ" that translates precisely to "The Key"); (3) is similarly discerned as "The Key" by alpha-numeric conversion

using the modern English gematria that yields "444" as the precise frequency of musical tuning that generates the base of the scale "C" note at precisely 528Hz; (4) is the recorded 'buzz' that honey bees make in hives while making honey in six-sided hexagonal-shaped combs, structured like water molecules, snowflakes, Carbon-6 organic chemistry rings, and the "Star of David [2]; (5) is the pure tone responsible for a 100% increase in antioxidant activity proven to protect nerve cells from alcohol damage [3]; (6) is therapeutically beneficial to neuro-endocrine functions [4]; (7) increases testosterone production influencing rat brains and behavior [5]; and (8) the precise electron surface plasmon resonance energy of pure gold [6]. This latter determination strikingly corroborates the '"gold offering" in the aforementioned section of the Bible that reveals the miraculous "MI" note as 528, applicable to music therapy and quantum healing.

A study by Sharma V., *et al*. [7] additionally confirmed the color of gold's pure nanostructure is 528 nm. They based this monumental determination on pure gold's surface plasmon resonance. These investigators found that pure gold plasmonic bands are altered by physicochemical factors, such as the size and shape of the nano-gold examined, parameters such as temperature, and pH of the salt water used in the testing solutions including impurities therein.

In addition, the green color of 528 nm has been scientifically determined to be: (1) an extremely unique and therapeutically valuable frequency of light energy broadcasting at the center of the electromagnetic color spectrum (i.e., the heart of the rainbow); (2) the main energy used by chlorophyl to produce life-giving, anti-oxidating, free-radical savaging, oxygen [8]; (3) the precise mathematical matrix resonance central to universal construction and ancient Pi and Phi constants [9]; (4) crucial to the determination of 5280 feet in the measured mile; (5) dominant in the 'sacred geometry' of circles; (6) extremely and extraordinarily therapeutic when applied in clinical practices for the treatment of myriad illnesses [10]; and (7) theorized to be the "miraculous repair" frequency for damaged DNA based on the genetic, epi-genetic, and quantum influence (in biophysics) that involves DNA's structuring and light and sound signaling. These quantum dynamics cymatically influence, arguably determine, molecular structuring central to organic chemistry, biology and genetic expression.

The Quantum World of Gold Plasmons Broadcasting 528 Frequency for Healing

In the world of physics, biophysics, and material science, plasmons are extremely important as quanta of plasma oscillations. In biophysics and electromechanics, plasmons deliver the energy of life. In medical science, the 528 frequency of plasmonic oscillation broadcasting from gold has been shown to have a therapeutic impact underlying the pharmacological benefits of chrysotherapy—the therapeutic use of gold in clinical practice.

Davis LS and Own CE [11], reviewed gold therapy as a well-established anti-inflammatory practice also treating autoimmune conditions such as rheumatoid arthritis. Gold works, they surmised, by inhibiting the first component of the complement cascade. In this way, gold may inhibit the deadly 'cytokine storm'. Gold interferes with prostaglandin synthesis and inhibits lysosomal enzymes that may propagate inflammation. Accordingly, in dermatologic practices, gold has been used to treat psoriatic arthritis, chronic cutaneous (discoid) lupus erythematosus (CCLE), and pemphigus [11].

Relevant to contemporary threats from emerging viruses, such as COVID mutants and bird flu (influenza A) RNA recombinants, An X, Erramilli S and Reinhard GM, studied plasmonic nano-antimicrobials, mechanisms and applications in microbe inactivation and sensing. [12] Their determinations largely explain how and why photophysical, as well as photoacoustic waves of energy mediated metaphysically through plasmonic resonance quantum fields are able to shatter and inactivate crystalline microbial membrane proteins to compete effectively against risky pharmaceutical antibiotics; thus, "greening" medicine by avoiding environmental toxicity and lessening antibiotic-resistant strains. Their comprehensive chart detailing the properties and inactivation mechanisms of plasmonic nano-antimicrobials shown in Figure 1 identifies these photonic capabilities that include disrupting pathogens by photoacoustic shockwaves causing nano-cavitation and germ membrane destruction. This intelligence also correlates with: (1) studies that demonstrate microbial inactivation by various frequencies of sunlight; [13] and (2) how immuno-surveillance and destruction of microbes by lymphatic cells may be mediated fundamentally by frequencies of energy, especially by 528nm, "typical of the collective oscillation of electrons in the conduction band of AuNPs." [6]

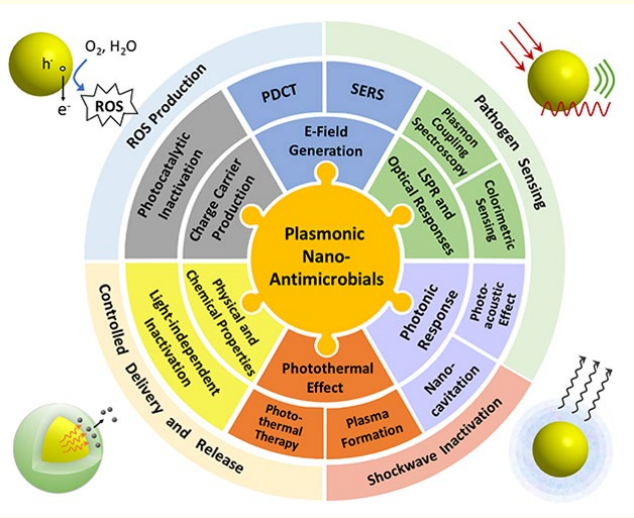

Figure 1

Given these new discoveries, the therapeutic benefits of gold may rely most on 528 frequency plasmon physics. Science explains that a plasmon is a quantum of plasma (etheric) oscillation. Light emits optical oscillations measured in wavelengths (i.e., nanometers). Small light packets called photons transmit this energy. These tiny light packets resonate the color green at the heart of the rainbow in 528nm. These plasma oscillations consist of plasmons. Such plasmons emanate scalar energy from concordant electromagnetic fields. A single plasmon is often considered a quasiparticle (not really a particle, but like a particle) since it arises from the quantization of plasma oscillations, just like phonons of sound are quantizations of mechanical vibrations resonating, for instance, at 528Hz frequency.

Thus, plasmons are collective, quantifiable, discreet, oscillations of the free electron gas (or the etheric, metaphysical, spiritual foundation of physical matter) with quantifiable quality and density. For example, at optical frequencies such as gold's 528 nm, plasmons can couple with (or interfere with) another photon of light, or even phonon of sound. These dynamics can create, for better or worse, another complementary or antagonistic quasiparticle called a plasmon polariton. Potentially therapeutic or damaging, these polaritons result from strong coupling, or interference, with photons (i.e., electromagnetic waves whose power, or energy signature, is imparted by discrete mathematical frequencies). These resulting forces transmit mathematical messages resulting in electric or magnetic dipole movements. The waves of excitation or sedation impact, even underly, solid or liquid states of matter. Therapeutic or intoxicating substances are similarly inspired. Such message carriers include phonons, photons, plasmons, or excitons. By so doing, polaritons produce their impact in quantum physics and biophysics. They are described as energies that result from the crossing of the dispersion of light with any interacting resonance frequency, such as other photons of light, phonons of sound, water waves, or water rings [14]. The latter water molecules are hexagonally structured, based on corresponding matrix math responsible for universal design. Likewise, structured water molecules, like snowflakes, feature 528 frequency acoustic (i.e., cymatic) influence and resulting structuring. This is why, in subatomic particle physics, math is used to quantify the spin and integer value of electrons and their integral particle structures. In biophysics, these subtle dynamics play crucial roles in genetic expression of phenotypes, epigenetics, and healing.

Given this understanding, the surface plasmon resonance (SPR) of gold is a classical physics phenomenon in which gold's oscillating and propagating plasmon can interface with other substances such as water and silver. Their energies may combine and complement, or be attenuated by dielectrics. This way, plasmon frequencies either excite, amplify, or diminish, inherent plasmon frequencies of substances at their interface.

Accordingly, this intelligence is applicable to the development of remedies, healing devices, and electroceuticals, or alternatively to the biophysics and diagnosis of diseases.

528 frequency gold plasmon resonance and hydrotherapy

In researching and confirming this multidisciplinary topic, the author queried the most advanced commercial artificial intelligence program (ChatGPT4 high "K;" by OpenAI/Microsoft). The following results were obtained and knowledge made known or confirmed.

The ability of gold's surface electrons to oscillate in response to 528 nm green light has been proven [6,7]. This phenomenon, called Localized Surface Plasmon Resonance (LSPR) allows gold nanoparticles (AuNPs) to absorb and scatter light and/or acoustic energy with exceptional efficiency, especially in superconductive water. When 528 nm is used and measured in gold plasmon studies, this produces distinct optical effects in the visible spectrum [6,7].

Such plasmonic behavior of gold nanoparticles is determined by their size, shape, chemical environment, and synthesis conditions. Among the many wavelengths that gold nanostructures can be fine-tuned to resonate with, the 528 nm wavelength is particularly intriguing for researchers exploring its healing properties and applications in structured water.

The field of water structuring was inspired by the works of such luminaries as doctors Viktor Schauberger, Marcel Vogel, Jacques Benveniste, Robert Saykally, Lee Lorenzen, Masaru Emoto, Steve Haltiwanger, Leonard Horowitz, and others. Their studies evolved science showing that structured water (also called "Clustered Water") plays a vital role in genetic expression by epi-genetics causing cellular upregulation from light and sound signaling (i.e., optoacoustics). Dr. Saykally inspired the works of Lorenzen and his students: Emoto, Horowitz and others [15]. These pioneers heralded structured water, with its organized molecular configuration, for its capacity to enhance biological functions. For instance, Oxidative Reductive Potentials (ORPs) of structured water samples change the 'wet-ability' and anti-oxidant activity of solutions. ORPs are crucial in determining the antimicrobial capacity of silver hydrosol solutions. Such hydro-engineering increases or decreases the absorption of nutrients, drugs, or supplements. Thus, the interaction of 528 nm resonating gold and/or silver nanoparticles with structured water generates unique energetic and therapeutic properties.

Science has elucidated the unique exclusive resonance of gold nanoparticles (GNPs), their plasmonic tuning, and the theoretic coherence between nano-gold's optical behavior at precisely 528 nm and emerging fields of energy medicine. Dr. Lorenzen was the first to commercialize this knowledge with his development of a "Cats Claw Structured Water" formula that incorporated the immune enhancing properties of the botanical. Emoto, like Horowitz, was mentored by Lorenzen. Emoto pioneered cryogenic microscopy filming water clusters in response to music, prayer, or scalar energy reflecting human attitudes and intentions. Later, Horowitz advanced NASA science by developing the broad spectrum anti-microbial and immune booster, "OxySilver with 528". This incorporated the 528 frequencies of sound and light, superconducted by nano-size silver covalently bonded to structured water molecules.

Important determinations in this field include the plasmonics of gold and silver nanoparticles in structed water solutions. The LSPRs of gold and silver occur when light or sound interacts with the surface electrons of these superconductive nanoparticles. The energy causes the metals to oscillate collectively at a specific wavelength or audio frequency, such as 528 nm or 528 Hz. Studies show that the light and sound frequencies at which resonance occurs at the surface of such metals depends on: (1) Size: Smaller particles resonate at shorter wavelengths; larger particles shift to longer wavelengths; (2) Shape: Spherical particles resonate differently than rods, stars, or plates; (3) Local Environment: The dielectric constant of the surrounding medium (e.g., impurities in water) influences resonance. These properties underly or attenuate the Nobel metals' light and sound absorption and transmission. The intense light absorption of AuNPs at 528 nm has been noted in several studies [6,7]. Changes in solution pH and temperature impact the LSPR dynamics. pH 5 at 20 °C (68°F) present "the maxima of absorption peaks for all gold reaction samples [that] were in the range of 528nm" [16]. Higher temperatures influence molecular kinetics and particle growth. Moreover, temperature changes alter the electrostatic environment, affecting nanoparticle size, shape, and surface chemistry. Surface functionalization with molecules (e.g., lipoic acid) also impact the resonance slightly, providing a means of fine control over plasmonic behavior [6]. Accordingly, physicochemical parameters play important roles in gold and silver nanoparticle LSPRs and commercial applications [6].

Moreover, quantum entanglement of light photons and sound phonons has been determined by researchers at the Max Planck Institute [17]. Quoting this group, "The proposed optoacoustic (light+sound) entanglement scheme is based on Brillouin scattering. It is particularly resilient, suitable for integration into quantum signal processing schemes, and implementable at high environmental temperatures. The possibility of implementing this concept in optical fibers or photonic integrated chips makes this mechanism of particular interest for use in modern quantum technologies". Aside from electroceuticals, such optoacoustic applications include biosensors and imaging devices.

528 frequency silver plasmon resonance

"And God said, Let there be light: and there was light," Genesis 1:3 (KJV) records, suggesting the creative power of language, acoustic frequencies, on light. Further scientific study is needed pursuant to this and the aforementioned Bible code references

to silver and gold acoustically vibrating at 417 Hz and 528 Hz respectively, and their impacts on biology and the material world. 417Hz is the second note of the Solfeggio scale's six (6) notes. It is named "RE"—short for "'RE'sonance febris" in Latin [1].

Otomalo., *et al*. [18] studied optical and acoustic vibration modes of gold-silver core-shell nanoparticles. They explained the manner in which sound and light frequencies in the field of opto-acoustics dynamically interact in and through the plasmonic domain. They wrote: "While continuous-wave spectroscopy probes the stationary optical properties of the NPs, ultrashort and intense pulses of laser light can excite a series of energy exchange processes, each of them being characterized by a specific timescale. The light energy is initially absorbed by the electron gas, which is driven out of thermodynamical equilibrium. The energy is then redistributed within the electron gas and transferred to the lattice, through electron–electron and electron–phonon collisions, respectively, and the nanoparticle heats up. All these processes last for less than a few picoseconds. The thermal energy is further released into the surrounding medium through the interface. The steep initial warming up of the nanoparticle, which is homogeneous as the thermal energy is spread rapidly in the metal by electron transport, results in the sudden lattice expansion which launches a set of coherent acoustic vibration modes". In simple terms, light photons hit the Au/Ag NPs and sound phonons pop out.

Naruse., *et al*. studied such localized optical fields reflecting versus transmitting light frequencies from silver nanoparticles (SNPs) [19]. They found that the efficiency of wavelength frequency transmission and reflection of elemental silver nanoparticles was high for both randomly structured SNPs versus highly ordered SNPs. As shown in their chart reprinted below, the "observed spectral properties of the fabricated device, . . . exhibit[ed] high reflectance for near-infrared light while maintaining a high transmittance in the visible and far-infrared regions. Their blue arrow points to high transmittance of light at or near 417 nm [19].

The idea of silver nanoparticles interacting with gold's 528 light and sound via optoacoustics, particularly at this surface plasmon resonance (SPR) wavelength of Solfeggio "MI", is now a well-established scientific principle. [20] As explained above by

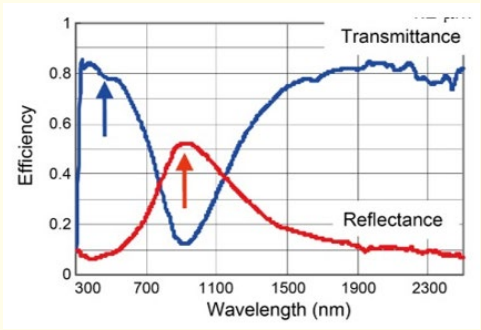

Figure 2

Otomalo., *et al*. when silver nanoparticles are exposed to light (or sound), their conduction electrons oscillate collectively in response to the electric field. Sound broadcasts thereby; and this interaction of light and sound wavelengths generate LSPRs depending, as mentioned, on the nanoparticle's size, shape, and surrounding environment. For silver, this wavelength is typically in the UV-visible range (e.g., 390–550 nm) [18]. This range includes the 528 nm frequency of gold, the 417 nm wavelength theoretically intertwined with the 417Hz frequency of Solfeggio "RE" that plays adjacent to the 528 Solfeggio "MI" note. The adjacent lower note in the scaled energy system resonates at 396Hz frequency. This plays the "DOE" note (originally called "UT-quent laxis") completing the first three Solfeggio tones in the scale, "DOE, RE, MI". [20]

As detailed in the reference text [1], *Webster's Dictionary* defines UT-quent laxis, as "a unit of magnetic field strength equal to 10^5 power gauss". Webster's definition of "RE-sonare febris" (i.e. Resonance) includes, "a vibration of large amplitude in a mechanical or electrical system caused by a relatively small periodic stimulus of the same or nearly the same period as the natural vibration period of the system. . . . a larger than normal vibration produced in response to a stimulus whose frequency is close to the natural frequency of the vibrating system, as an electrical circuit, in which a value much larger than average is maintained for a given frequency". The author's text theorizes this "vibrating system" is that of "universal design" and "matrix math," that operates via musical frequencies of sound giving rise to light. And *Webster's Dictionary* defines "MI-ra gestorum" (MIracle) as "an extraordinary occurrence that surpasses all known human powers or natural forces and is ascribed to a divine or supernatural cause esp. to God". [1]

Returning to advancing science, light and silver interactions can increase the antimicrobial impact of silver hydrosol solutions. Silver nanoparticles in water can interact with light to produce reactive oxygen species (ROS), such as hydroxyl radicals or superoxide ions [21]. These ROS have been shown to damage the membranes, proteins, and DNA of microbes, enhancing antimicrobial activity. Studies have also shown that UV or visible light exposure can significantly boost silver nanoparticles' ability to kill bacteria and viruses [22].

The antimicrobial impact of silver coupled with UV light depends on the SPR wavelength coherence in the interaction between light and silver nanoparticles, because the surfaces of the nanoparticles absorb and scatter light the most. Accordingly, the theoretic 417 nm wavelength of pure silver SPR, coupled with the 528 nm frequency of gold, might optimize risk-free, environmentally friendly, "green" concordant antimicrobial impacts [23]. This intelligence could substantially reduce or eliminate the need to rely on toxic, environmentally damaging, antibiotics and advance anti-viral cancer therapies.

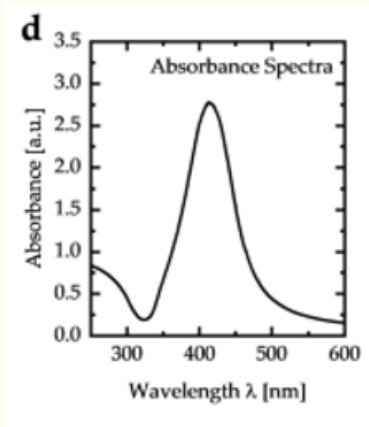

Figure 3

For silver nanoparticles, tuning the SPR closer to 417 nm using a light source emitting at that wavelength, could theoretically enhance such antibiotic performance. Corroboration for this theory comes from the research of Alzoubi., *et al*. showing "[t]he UV–Vis absorbance spectrum of AgNPs exhibits a fingerprint peak at 414 nm, corresponding to the surface plasmon resonance of AgNPs" [24]. The small difference between 414 and 417 nm may be an artifact from impurities in the water, or otherwise mooted by coherence between these similar light frequencies. As Alzoubi., *et al*. reported, "[a]ccording to Mie's theory, the wavelength of the LSPR for the spherical AgNPs has a different value compared with the experimental spectrum due to the impurities present in water that results from the preparation process. In addition, the fact that this theoretical spectrum addresses only single sized Ag nanoparticles constricts and confounds analyses. In contrast, the experimental spectrum presents many sizes of AgNPs in water. Moreover, the excitation of the LSPR of AgNPs was simulated by Alzoubi's group using the finite-difference time-domain (FDTD) method at different wavelengths. Spherical AgNPs, they noted, are the most widely used materials in biosensors, biomedicine, optoelectronic devices, and solar cells due to their surface plasmon resonances located in the visible spectrum region [of 414-417nm] [24].

Polywka., *et al*. [25] studied such "light controlled assembly of silver nanoparticles" and provided antibiotic manufacturing advice increasing efficiency and economy [25]. These researchers showed that silver nanoparticles exposed to light at or near their SPR wavelength produced higher amounts of ROS, leading to increased antimicrobial effects [18,25]. Furthermore, plasmonic heating caused by certain resonance wavelengths, wherein nanoparticles efficiently convert light into heat, caused localized heating that can damage microbial cells or enhance the penetration of antimicrobial agents [18].

Other studies explored different wavelengths (UV, blue, or green light) in combination with silver nanoparticles. While UV light is the most commonly studied, visible light (especially green at 528 nm) has shown potential for light-activated therapies beyond antimicrobial applications. In addition, nano silver tuned to 528 nm resists aggregation, ensuring that the colloidal or nano-silver hydrosol remains stable and effective over time [26].

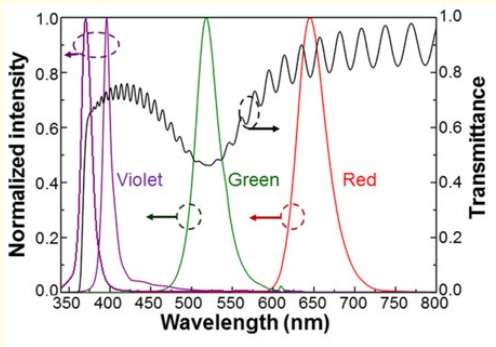

Figure 4

Yao, Yang and Teng., *et al*. [26] specified the effective illumination spectral range for causing AgNP aggregation using light-emitting diodes (LEDs) of designated wavelengths. Their adjacent Figure 4 shows the transmission spectrum of a fresh AgNP sample. They reported the greatest transmission of AgNPs light energy occurred "around 520 nm in wavelength," corresponding to the LSPR. "The emitted spectral peaks of the red, green, and two violet LEDs are located at 650, 520, 395, and 367 nm, respectively". These peaks correspond, very closely, with the first four (4) Solfeggio scale acoustic frequencies—namely 396, 417, 528 and 639Hz frequencies [1,26]. The small differences may, once again, be attributable to slight impurities in the testing media.

Fahim., *et al*. [27] compared AgNPs "green synthesis" to conventional chemical and physical methods. They concluded that "green synthesis offers several advantages, including nontoxicity, absence of pollutants, environmental friendliness, cost-effectiveness, and ecological soundness. . . . [Green] biological synthesis offers an eco-friendly and sustainable alternative by leveraging plant extracts, microbes, and natural resources as reducing agents and stabilizers, thereby minimizing the need for potentially hazardous chemicals". The fact that "green synthesis" depends mostly on the pigment chlorophyll in plants, that resonates at or near 528 nm of light at the heart of sunshine and rainbows, is significant.

Conclusion

There are biomedical and therapeutic implications resulting from gold and silver's plasmon resonance science. For instance, their nanoparticles absorbing light at 528 nm exhibit unique photothermal, antioxidant, and bioelectric effects, expanding medicine's myriad diagnostic and therapeutic applications. Such plasmonic properties are being explored for bioimaging, antimicrobial uses, drug delivery, and cancer therapies [28]. This intelligence offers untapped potential for advancing energy medicine, public health, and personal wellness using "green" biotechnologies.

528 nm of green light is: (1) the proven LSPR energy of pure gold; and (2) within the range where silver nanoparticles can be tuned to exhibit optimal plasmonic resonance for myriad medical applications, including anti-cancer probabilities [29]. This latter claim is corroborated by Gurunathan., *et al*. [30] in their concluding statement, "AgNPs derived from natural sources . . . have therapeutic potential for cancer. Further studies are required to investigate the anticancer effects of AgNPs in other cellular models using *in vivo* studies" [29].

This paper is the first to present links between the ancient original Solfeggio musical scale and the LSPR of Nobel metals gold and silver. Therapeutic frequencies of light and sound discussed herein are advancing the fields of photoacoustics, optoacoustics, and epi-genetics [31]. Pursuant to gold and silver NPs outputting LSPR frequencies, this study provides the first evidence that 528 nm, that corresponds to 528Hz frequency of sound, is the optimal wavelength for nano-silver, colloidal silver, and nano-gold manufacturing for diagnostic and therapeutic purposes. There is now substantial compounding scientific evidence to support this conclusion.

The underlying principles of plasmon resonance, ROS production, and wavelength-specific effects, support the idea that tuning gold and silver nanoparticles to leverage light and sound at 528 frequencies, their 'octaves,' and/or Solfeggio scale harmonic tones (i.e., 396, 417, and 639 Hertz) is likely to optimize diagnostic and therapeutic efficacy.

This intelligence and commercial advisement is largely based on the determination that gold nanoparticles are shown to have LSPR optimally tuned to 528nm, and pure silver, likewise, resonates well in the 'green frequency' of 528 light and sound [24,26]. Such resonance enhances gold and silver's ability to: (1) interact with oxygen and water to produce ROS that destroy bacterial cell walls, viral structures, fungi, and certain cancer cells; [28] (2) be precisely engineered to ensure optimal interaction with targeted cells or microbes, increasing therapeutic efficiency and economy; and (3) penetrate and disrupt protective biofilms formed by bacteria, making such novel electroceuticals highly effective against a broad array of microbes, including antibiotic resistant pathogens. As time passes, this 528 tuning will continue to unlock new uses in medicine, industrial sensing, material science, and commerce.

Ethics declaration

The author gratefully acknowledges his conflicting interests in numerous 528 products and services having pioneered this field beginning in 1998 with the publication of *Healing Codes for the Biological Apocalypse*, that first identified 528 frequency as the "'MI'racle" note of the Solfeggio musical scale.

Bibliography

1. Horowitz LG and Puleo J. "Healing Codes for the Biological Apocalypse". *Medical Veritas International, Inc.,* (1998).

2. Samarghandian S., *et al*. "Honey and health: A review of recent clinical research. *Pharmacognosy Research* 9.2 (2017): 121-127.

3. Babayi Daylari T., *et al*. "The effects of 528 Hz sound wave to reduce cell death in human astrocyte primary cell culture treated with ethanol". *Journal of Addiction Research and Therapy. Open Access* 8 (2017).

4. Akioto K., *et al*. "Effect of 528Hz music on the endocrine system and autonomic nervous system". *Health* 10 (2018): 1159-1170.

5. Babayi Daylari T., *et al*. "Influence of various intensities of 528Hz sound-wave in production of testosterone in rat's brain and analysis of behavioral changes". *Genes Genome* 41 (2019): 201-211.

6. Bhardwaj H., *et al*. "A Label-Free Ultrasensitive Microfluidic Surface Plasmon Resonance Biosensor for Aflatoxin B1 detection using Nanoparticles integrated Gold chip". *Food Chemistry* (2019). Quoting these authors: "Localized surface Plasmon resonance is highly dependent upon size, shape and chemical modification of nanoparticles. In order to characterize the optical plasmonic properties of our AuNPs, UV-visible absorbance spectroscopy studies were performed. Figure S1 (a, curve i) presents UV-visible spectrum of synthesized CTAB-AuNPs in which a clear absorbance peak appeared at 528 nm, typical of the collective oscillation of electrons in the conduction band of AuNPs with specified incident wavelength (Ghasemi *et al*., 2015). Then, DCM washed AuNPs were characterized, and a similar absorbance peak at 528 nm was obtained (Figure S1 (a, curve ii)), proof of the conservation of the colloidal behaviour of the DCM washed AuNPs.

7. Sharma V., *et al*. "In situ tuning and investigating the growth process of size controllable gold nanoparticles and statistical size prediction analysis". *Colloids and Surfacts A: Physicochemical and Engineering Aspects* 681 (2024).

8. Horowitz LG. "The Book of 528: Prosperity Key of LOVE". Medical Veritas International, Inc. (2006).

9. Showell V. "528 mathematics and geophysics: Why geophysics depends on 528 frequency dynamics". *528Revolution.com* (2013).

10. Linde A and Ni J. "Green light therapy benefits: What the science says". Therapeutic Beams. Reprinted by Medical Veritas International, Inc. (2022).

11. Davis LS and Owen CE. "Comprehensive Dermatologic Drug Therapy". (Third Edition; Wolverton SE Editor), (2013).

12. An X, Erramilli S, Reinhard BM. Plasmonic nano-antimicrobials: properties, mechanisms and applications in microbe inactivation and sensing. Nanoscale. 2021 Feb 14;13(6):3374-3411. doi: 10.1039/d0nr08353d. Epub 2021 Feb 4. PMID: 33538743; PMCID: PMC8349509. Online at: https://pmc.ncbi.nlm.nih.gov/articles/PMC8349509/

13. Nelson KL, Boehm AB, Davies-Colley RJ, et. al., (2018). Sunlight-mediated inactivation of health-relevant microorganisms in water: a review of mechanisms and modeling approaches. *Environmental Science: Processes and Impacts*, *20*(8), 1089-1122. https://doi.org/10.1039/c8em00047f

14. Pangman MJ and Evans M. "Dancing Water: The New Science of Water". (Second Edition; 2017) Uplifting Press.

15. Liu K., *et al*. "Water Clusters". *Science* (1996).

16. Sharma V., *et al*. "In situ tuning and investigating the growth process of size controllable gold nanoparticles and statistical size prediction analysis". *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 681 (2024): 132733.

17. Zhu C., *et al*. "Optoacoustic entanglement in a continuous Brillouin-active solid state system". *Physical Review Letters* (2024). Press Release published by Max Planck Institute for the Science of Light. MPL Scientists find a new way of entangling light and sound.

18. Otomalo TO., *et al*. "Acoustic vibration modes of gold-silver core-shell nanoparticles". *Chemosensors* 10 (2022): 193.

19. Naruse M., *et al*. "Randomness in highly reflective silver nanoparticles and their localized optical fields". *Scientific Report* 4 (2014): 6077.

20. It should be noted that the first three notes of the Solfeggio scale, 396, 417 and 528, fall within this range of silver photonic energy. Moreover, in the aforementioned Bible encryption, the silver element is associated with the 417Hz frequency. Additionally noteworthy is the 111Hz differential between 417 and 528Hz, as seen in the intervals between four of the six Solfeggio tones. 396, 417 and 528 frequencies are harmonically concordant; each interval resolving to the number three (3) using Pythagorian conversion.

21. Zhang W., *et al*. "Photogeneration of Reactive Oxygen Species on Uncoated Silver, Gold, Nickel, and Silicon Nanoparticles and Their Antibacterial Effects". *Langmuir* 29.15 (2013).

22. Nakamura S., *et al*. "Ultraviolet Irradiation Enhances the Microbicidal Activity of Silver Nanoparticles by Hydroxyl Radicals". *International Journal of Molecular Sciences* 21.9 (2020): 3204.

23. Recently, green synthetic routes were developed and utilized to obtain Ag-NPs and bypass the production of hazardous substances. See: Magdy G., *et al*. "A comprehensive review on silver nanoparticles: Synthesis approaches, characterization techniques, and recent pharmaceutical, environmental, and antimicrobial applications". *Microchemical Journal* 196 (2024): 109615.

24. Alzoubi FY., *et al*. "Localize surface plasmon resonance of silver nanoparticles using Mie theory". *Journal of Materials Science: Materials in Electronics* 34 (2023): 2128.

25. Polywka A., *et al*. "Light controlled assembly of silver nanoparticles". *Scientific Report* 7 (2017): 45144.

26. Yao YF., *et al*. "Formation of Surface Silver Nano-network Structures through Hot Electron Regulated Diffusion-limited Aggregation". *Scientific Report* 9 (2019): 6997.

27. Fahim M., *et al*. "Green synthesis of silver nanoparticles: A comprehensive review of methods, influencing factors, and applications". *JCIS Open* 16 (2024): 100125.

28. Homan K., *et al*. "Silver nanosystems for photoacoustic imaging and image-guided therapy". *Journal of Biomedical Optics* 15.2 (2010): 021316.

29. Fu L., *et al*. "Plasomonic Nanoparticle-Enhanced Optical techniques for cancer biomarker sensing". *Biosensors (Basel)* 13.11 (2023): 977.

30. Gurunathan S., *et al*. "Comparative assessment of the apoptotic potential of silver nanoparticles synthesized by Bacillus tequilensis and Calocybe indica in MDA-MB-231 human breast cancer cells: targeting p53 for anticancer therapy". *International Journal of Nanomedicine* 10.1 (2015): 4203-4223.

31. Menozzi L and Yao J. "Deep tissue photoacoustic imaging with light and sound". *npj Imaging* 2 (2024): 44.