



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CONCEPT OF PHYSICS IN ANCIENT INDIAN KNOWLEDGE SYSTEM

First Author : DARSHANA SANTOSH KELKAR.

Lecturer, Humanities and Applied science

VPM's polytechnic, Thane. INDIA

Abstract :—In ancient time, Indians were using astronomical instruments based on simple mechanism to measure distance of huge objects, height of huge object, to measure horizontal as well as vertical angles, positions of stars etc.

Bhaskaracharya was one of the popular Indian astronomer and mathematician who developed and designed many astronomical instruments and wrote a book named “**SIDDHANTA SHIROMANI**” in which he recorded astronomical observations.

.The resonance is a sound frequency matching concept i.e. forced = natural frequency

In ancient times people realized that certain sound or vibrations create strong effects. They observed certain sounds like echoes in caves , sound from natural element had intense effect on their surroundings. In ancient times people observed resonance in certain phenomena like vibrations in a string, echo in caves, humming sound in caves, etc.

Imagine our human body is like a music playing instrument having different energy centers called chakras. Metallic Bhasma, a term from Ayurveda, refers to the ash or residue obtained from metals such as gold, silver, copper, zinc ,iron through a series of purification and processing steps.

IndexTerms -- Yantra, Resonance , energy centers, metallic bhasma , seven chakras,

I. INTRODUCTION

1) Chakra yantra

One of the ancient astronomical instrument i.e. disk instrument of Bhaskaracharya is also known as chakra yantra (disk machine). Chakra Yantra is a sort of protractor which were used for angular marking of land and to mark angular position of cities, It is also used for finding boundaries of planets and stars using angular terms. Chakra Yantra is also used to measure time and some astronomical parameters like “natta, unnatta” (Sanskrit) means the method to determine time from shadow and for measurement of day . Chakra Yantra is also used for determining altitude i.e. height of the place from sea level, zenith distance of sun i.e. angular distance, to determine longitude of planets i.e. average angular position of planet.

2) Dhanu Yantra

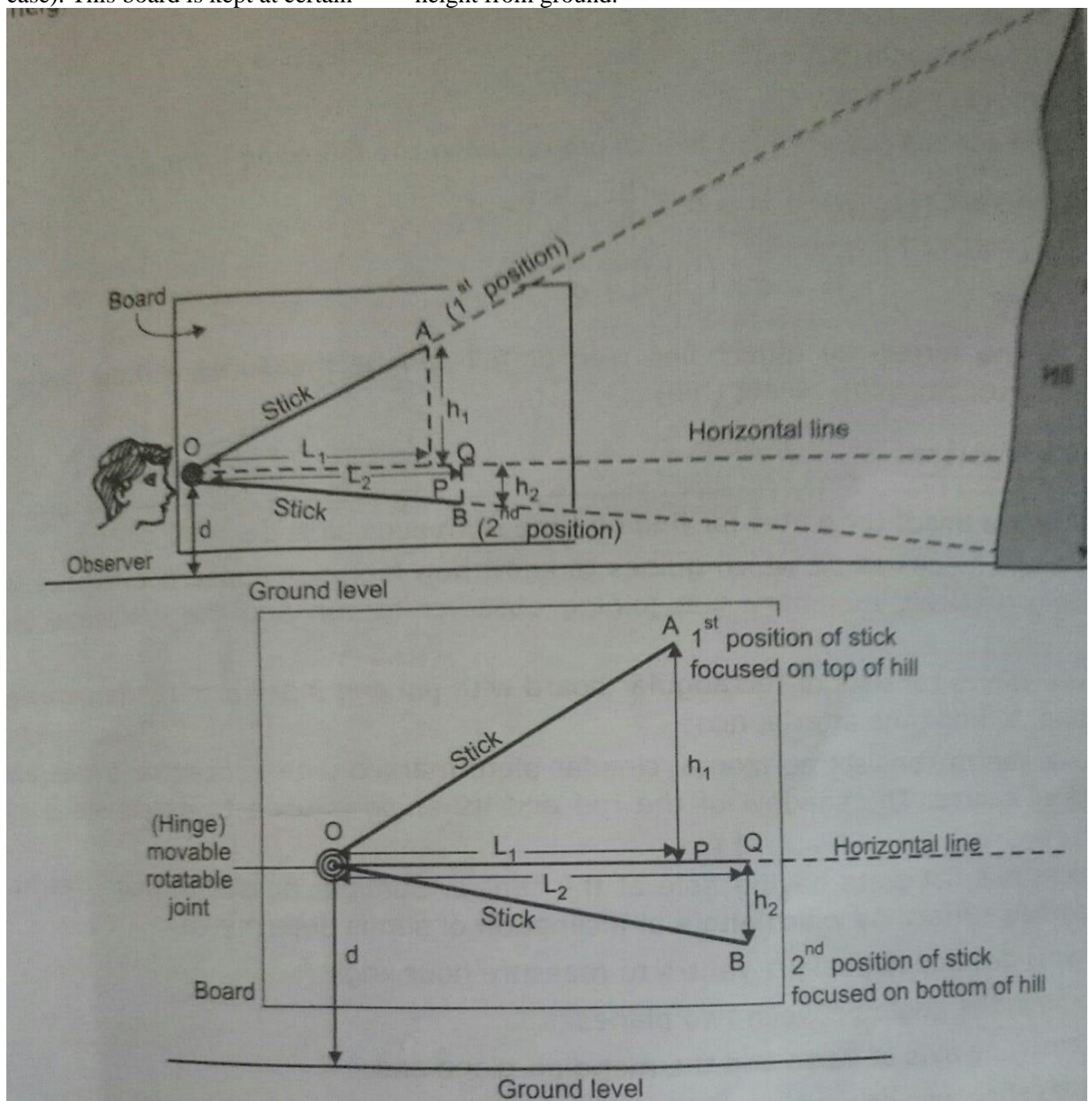
Dhanu Yantra was earlier known as chaapa yantra (chaapa is Sanskrit word and it means semicircle) . Dhanu Yantra or semicircular disk machine was used for the measurement of vertical angle. Bhaskaracharya fixed a arrow stick along the diameter of protractor (i.e. along a semicircular disk.) . This semicircular disk has angular graduations like protractor.

At the centre of this disk (protractor) a string (or chain) with plumb (plumb-bob) is attached

The vertical angular movement of arrow stick is noticed by plumb string position. If the arrow stick is rotated vertically by certain angle then that angle can be measured by difference in angle of position of string with plumb. Dhanu Yantra was used to measure height of terrestrial objects, diameter of the earth, circumference of earth, diameter of moon, distance between moon and earth. For measurement of height of terrestrial objects (like hill, tree), initially arrow stick is focused on the top of the object and then at the bottom of the object. The shift in the vertical angle is used to measure height of the object using trigonometric formulae (sine, cosine etc.)

3) Yasti Yantra

Yasti Yantra was developed by the great mathematician and astronomer Bhaskaracharya. Yasti Yantra is also referred as Dhi Yantra, or Stick Machine of Bhaskaracharya or it is also termed as cross staff. Yasti is Sanskrit word and meaning of it in English is stick (or rod or bar or pole). Using a Yasti (stick) mounted on a board, the height of huge object on the earth (i.e. terrestrial object like tree, hill small mountain) can be calculated. It is not necessary to measure the distance between observer and object. A stick (yasti) of the specific length is mounted (hinged) on a wooden board. This wooden board is kept at sufficient distance from the terrestrial object e.g. hill (in this case). This board is kept at certain height from ground.



OA- 1st position of the stick when focused on top of hill (object)
 OB- 2nd position of the stick when focused on the bottom of hill (object)
 d- distance of hinged joint from the ground level.

AP- perpendicular (normal) drawn from position "A" on horizontal line
 BQ- perpendicular (normal) drawn from position "B" on horizontal line
 H- height of hill(object) to be measured
 H1- distance "AQ" i.e height of 1st triangle
 H2- distance "BQ" i.e height of 2nd triangle
 L1- length of "OP" where "P" is the projection of "A" on horizontal line
 L2- length "OQ" where "Q" is the projection of "B" on horizontal line

Initially observer will focus (point) tip of the stick on the top of hill (object) and a line OA is drawn
 Now observer will focus (point) tip of the stick on the bottom of hill (object) and a line OB is drawn
 Now draw perpendicular from "A" on horizontal line at "P" i.e "AP".
 Now draw perpendicular from "B" on horizontal line at "Q" i.e "BQ".
 Measure length of OP as a L₁
 Measure length of OQ as a L₂
 Measure height of 'AP' as a h₁
 Measure height of 'BQ' as a h₂.

2 Equation:

The height 'H' of the hill (object) can be calculated using the following formula,

$$\text{Height of object} = H = d \times \left(\frac{h_1 L_2}{h_2 L_1} \right) + d$$

Thus height of the terrestrial object like tree or hill can be measured without knowing the distance of the observer from the object (hill).

- 4) **Phalak yantra** --Phalak yantra is a board for finding time from sun's altitude. The altitude angle means the angle which guides to know how high sun appears in the sky. Altitude angle is the angle between imaginary line joining observer to sun and the horizontal plane on earth. Some phalak yantra consists of rectangular board with pin and index arm for determining time from sun's altitude, to find time after sunrise. Some consists of horizontal circular plate marked with concentric circles and stick hinged at centre. The shadow of the rod and its angle is used to determine position of celestial object. Phalak yantra is like an equatorial sundial used for finding position of celestial objects and for finding inclination/declination of planets and stars.

II.Theoretical framework

Construction of chakra yantra is a simple wooden disk having hole at the center, Hole diameter is such that the stick should fix vertically (along the axis of disk) into the disk. Normally, length (height) of the stick is approximately equal to diameter of the disk. Chain is fixed at the axial center. Many times this disk is in the suspended position. Phalak yantra is a flat plate having hole at the centre. Sunlight passes through this hole and incident on a marked surface by which angle of inclination of sun is determined. Bhaskaracharya developed phalak yantra to measure hour angle.

The hour angle is the angle between two planes, one is plane consisting axis of earth and the meridian plane second, plane consisting axis of earth and given point..

Meridian plane: consists celestial poles, zenith and nadir of observer.

Zenith: Highest point the sun reaches above head.

Nadir: Vertically downward from the observer

In case of resonance, if we pluck different wires of musical instrument like sitar, guitar, violin then it produced unique sound..It means every wire has its own frequency of vibration, called natural frequency.

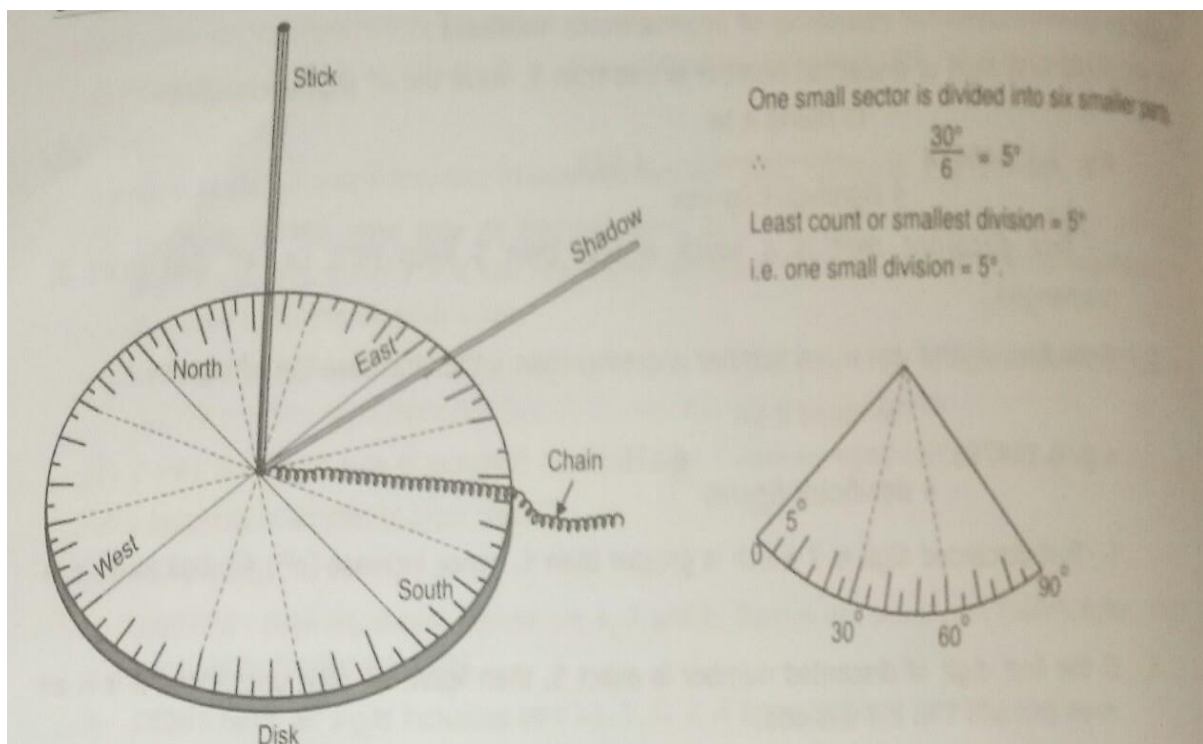
Each chakra ie.energy centre has its own frequency of vibration .Sound of certain frequency called Mantras resonate and ignite certain chakas.Thus different mantras activate different chakras(energy centers) in the body which affect on proper energy flow in a body.

There are seven different chakras in the body namely, Muladhara, Swadhistana, Manipura, Anahata,Vishuddhi,Aagya,Sahasrara.

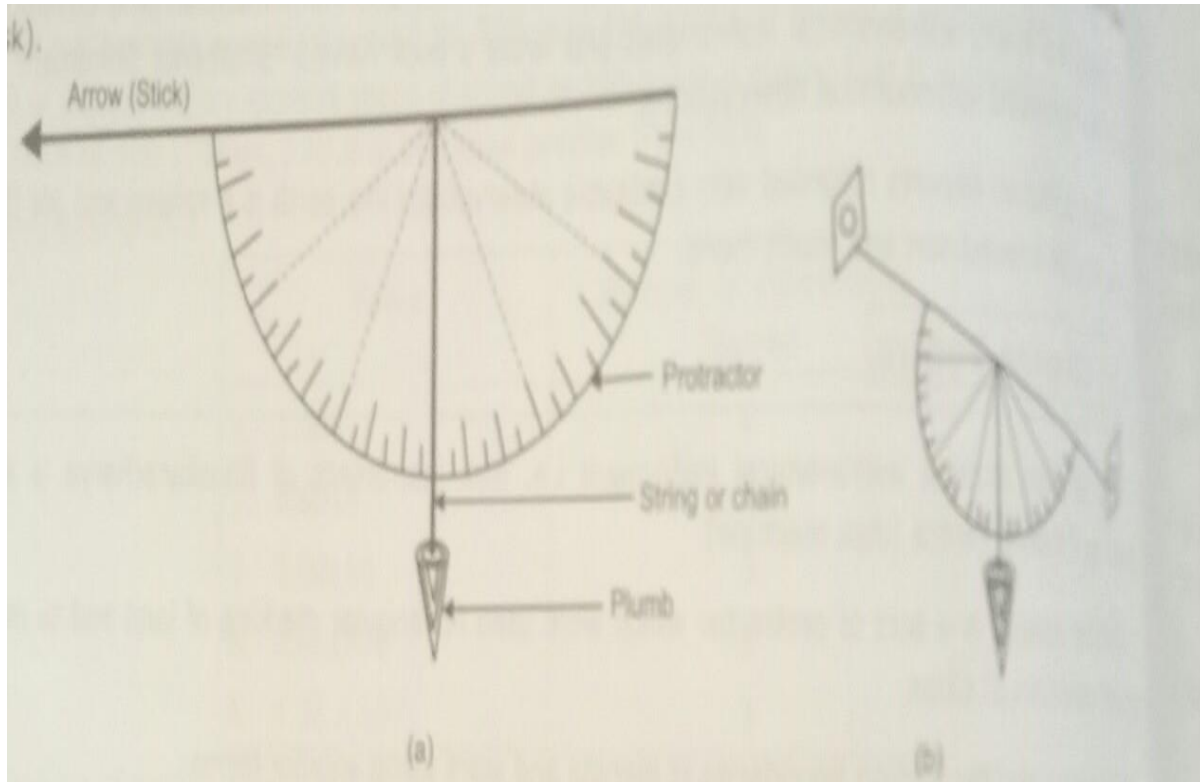
These are also known as Root chakra, Sacral chakra,Solarplexus chakra, Heart chakra, throat charka, third eye charka, crown charka respectively.

Our brain can differentiate different intensities of sound, different notes of sound, different frequencies of sound. Thus different mantras with different energies (respective frequencies sound) resonate and activate different chakras in a body which affect on proper energy folw in a body.

CHARKA YANTRA



DHANU YANTRA



III. Figures and Tables

(Energy centre) Chakra No.	Sanskrit Name	Equivalent English Name	Location or Position	Element	Mantra (Chant) may be like this to ignite/stimulate chakra (Bij Mantra)	Effect, outcome, significance
7	Sahasrara	Crown chakra	Top of head – base of crown	Aadi Tattva, thought	Aum	→ I understand - spirituality, divine, y samadhi (also called 1 petaled – innumerable)
6	Aagya	Third eye chakra	Eye brow centre	Manas, mind, light	Om	→ I see - awareness, percepti realisation
5	Vishuddhi	Throat chakra	Throat pit	Akash, space	Hum	→ I speak - communication
4	Anahata	Heart chakra	Centre of rib cage	Air	Yam	→ I love - love, healing, kindne passion
3	Manipura	Solar plexus chakra	Below rib junction	Fire	Ram	→ I do Wisdom, power
2	Swadhistana	Sacral chakra (genital organ)	Below navel	Water	Vam	→ I feel Pleasure, sexuality, longevity, promotes emotional well-being
1	Muladhara (Mul aadhar)	Root chakra (foundation)	Base of spine Lowest of 7 chakra	Earth	Lam	→ I am Stability, security, stamin endurance

Ancient Ayurveda- In Ayurveda medicines bhasma are believed to have therapeutic properties, and are used in the preparation of various medicinal formulations

Metallic bhasma, from Ayurveda, refers to the ash or residue obtained from metals like gold, silver, copper, zinc, iron, from some nonmetals minerals also bhasma can be obtained. The preparation of metallic bhasma is a meticulous and highly regulated process involving several stages of purification, detoxification, and incineration the aim is to transform the metals into a bioavailable and therapeutically potent form with minimized toxicity. This involves specific heat treatments, blending with herbal extracts and other traditional procedures to become biocompatible

Some common examples of metallic bhasma used in ayurvedic medicine include Swarna Bhasma (gold ash), Rajat bhasma (silver ash), Tamra bhasma (copper ash), and yashada bhasma (zinc ash), Naga bhasma (lead), Loha bhasma (iron),

Muktashakti bhasma (calcium), Abhrak bhasma etc.

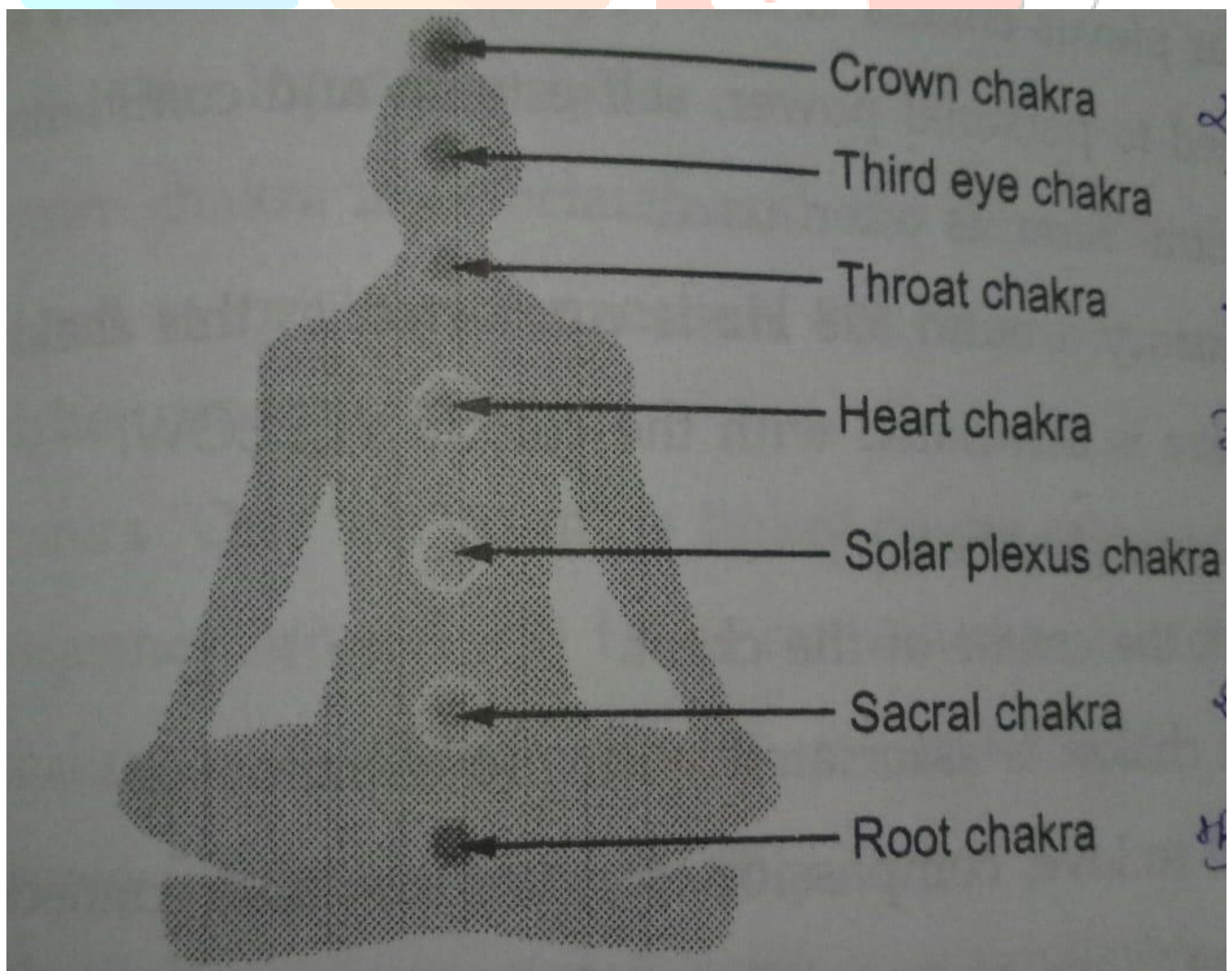
Bhasma are claimed to be biological nanoparticles. Material science has progressed widely with the applications of nanomaterials.

Nanomaterials and structures possess very unique features owing to their small size, as compared with larger bulk materials, making them suitable candidates for novel applications [1]. Nanotechnology has been the focus of

considerable attention in medicine due to the facility with which nanostructures interact with the body at the molecular scale [2]. In the ancient time it may be a serendipitous discovery that when metals, minerals like gems like gold, silver,

copper, mercury, lead, iron, arsenic etc. are heated to red hot/burned several times and then mixed with herbs and

other medicinal agents drastically altered the effectiveness of certain Ayurvedic medicines without producing any toxic or harmful side effects. Bhasma don't produce any harmful metabolite as it do not get metabolized, but breakdowns heavy metals in the body.



IV. RESULTS AND DISCUSSION

Ancient Indian experts recorded very creditable observations like earth is a sphere and not flat, earth rotates around sun and much more.

Bhasma are often incorporated into ayurvedic formulations that are prescribed for various health conditions, such as digestive disorders, personality disorder, mental disorder respiratory ailments and immune system support. Gold ash regulates neurological disorder and improves brain function and memory. Silver bhasma (rajat) if applied on wound it heals and recovers fast. Silver bhasma has antimicrobial property. Copper bhasma (Tamra) reduces inflammation. Thus Metallic bhasma was used in Ramayana treatment to increase life energy, increase vitality and to increase immunity.

The concept of using different frequencies or mantras to activate or balance the chakras in the body is rooted in various ancient spiritual and healing traditions, particularly in yoga, meditation and Ayurveda. Each chakra are associated with specific organs, emotions and spiritual aspects. To avoided Physical, emotional, or spiritual discomfort these chakras must be properly balanced.

V. REFERENCES

1. R. Sharma, P.K. Prajapati

Nanotechnology in medicine: leads from ayurveda

J Pharm BioAllied Sci, 8 (1) (2016), pp. 80-81, [10.4103/0975-7406.171730](https://doi.org/10.4103/0975-7406.171730)

[View at publisher](#)

[View in ScopusGoogle Scholar](#)

2. [4]

A. Chaudhary

Ayurvedic bhasma: nanomedicine of ancient India--its global contemporary perspective

J Biomed Nanotechnol, 7 (1) (2011 Feb), pp. 68-69, [10.1166/jbn.2011.1205](https://doi.org/10.1166/jbn.2011.1205)

PMID: 21485807

[View at publisher](#)

[View in ScopusGoogle Scholar](#)

3. Basic science and appled science book by Dr. M.S.Pawar and Dr. M.A.Sutar and Dr. basher N. Jamdar

