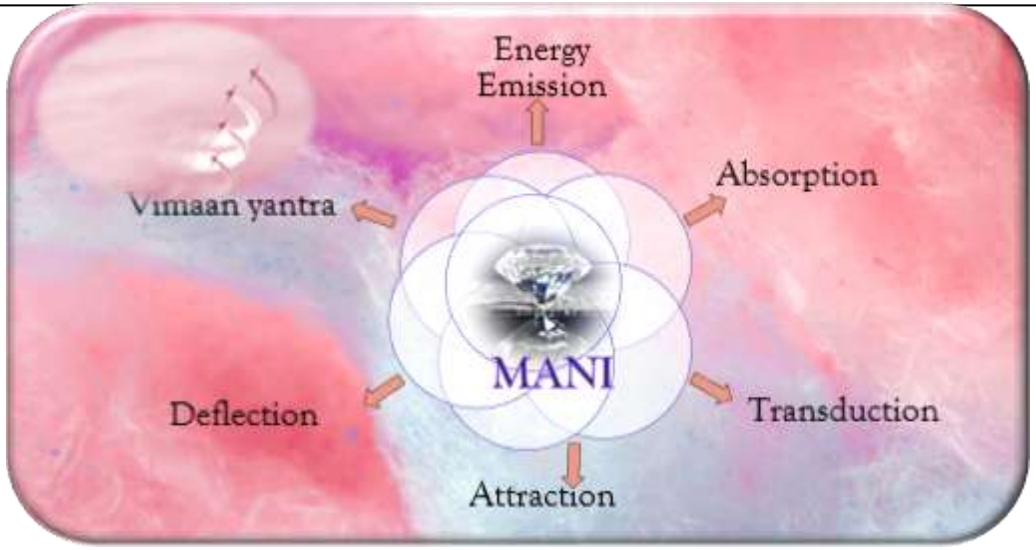
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THE SACRED SPARK: EXPLORING CRYSTAL INTEGRATION IN VAIMANIK-YANTRAS THROUGH TIME

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ABSTRACT
Vimaan-Shastra, by Maharshi Bhardwaj refers to "Mani" as "energy-crystal" that used in various operations of Vimaan-yantras involved in power generation, shielding Vimaan from enemy-attacks or weather-disturbances, see distant objects, render Vimaan invisible, energy emission, absorption, attraction, deflection and transduction. This article unveils their properties, synthesis, applications and incorporation in Yantras. These mani were thermally insulating yet electrically conductive and could capture solar and other radiations. There are used as thermal-barrier for protection from extreme heat while allowing efficient electron flow. Most of the mani mentioned in Viman-Shastra were not naturally available, but were synthesized artificially.
KEY-WORDS: *Mani, Crystal, Vimaan, Yantra, Energy-emission.*



Graphical Abstract: EXPLORING MANI INTEGRATION IN VIMAAN-YANTRAS OF ANTIQUITY

In a crystal we have clear evidence of the existence of a formative life principle, and though we cannot understand the life of a crystal, it is nonetheless a living being

NIKOLA TESLA

1.0 INTRODUCTION

Mani, in ancient Indian science, was more than just a gem—it was a powerful energy crystal used for emission, absorption, attraction, deflection, and transduction. Bharadwaj's *Vimaan-Shastra* describes Mani as an essential component in the operation of *Vimaan* (mythical flying machines), serving purposes like energy generation, protection, visibility enhancement, and concealment [1,2]. These crystals, both naturally occurring and artificially made, reflect an advanced understanding of material science. Some Manis acted as power sources, others provided shielding against attacks or weather disturbances, and certain ones helped pilots see far distances or render their aircraft invisible. Compared to ordinary gemstones, these Manis possessed mystical and technological properties, resembling energy devices rather than natural crystals. References in mythology, like the *Syamantaka Mani*, align with this view of Manis as extraordinary objects. Their presence in yantras and Vimaans suggests ancient knowledge blending science, engineering, chemistry, and spirituality in remarkable ways.

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2.0 CONTEMPORARY KNOWLEDGE OF CRYSTAL

Crystals are solids with highly ordered atomic structures, forming repeating patterns known as crystal lattices. These lattices exhibit symmetry, classifying crystals into different systems like cubic, tetragonal, and hexagonal. Depending on their composition, crystals can be transparent, translucent, or opaque, often reflecting light. Major types include ionic crystals (e.g., table salt), covalent crystals (e.g., diamonds), metallic crystals (e.g., gold), and molecular crystals (e.g., ice). Their stability is influenced by intermolecular forces like van der Waals interactions, ionic bonds, and hydrogen bonding. Advances in X-ray diffraction and electron microscopy have revealed atomic-scale details, enhancing materials science research. Naturally occurring crystals like quartz, diamonds, rubies, and emeralds form over millions of years, while synthetic crystals serve applications in electronics, optics, and medicine. The study of crystal chemistry explores atomic bonding, symmetry, and lattice dynamics, linking microscopic structure to optical, magnetic, and electronic properties in innovative ways [3].

3.0 MANI (CRYSTAL) AS PERCEIVED BY ANCIENT BHARATIYA SCIENTISTS

103 Manis have been accepted as suitable for being fixed as Crest-Jewels of the Vimaan by "Mani-Kalp-Pradeepika, which are classified in 32 classes. Out of these 103 Manis only following are described in detail in "Mani-kalpa-pradeepika" belonging to the 12th class of 32 groups of crystals, They are:

Anjeera,	Bharadwaja,	Bhaskara,	Chakrakantha,
Chinta Mani,	Chitraka,	Deeptaka,	Dimbhika,
Isheeka,	Kaalabhyrava,	Kaashabhrit,	Kalaakara,
Kalaantaka,	Kalpaka,	Kaarmika,	Kanjaasya,
Kaamikodbhava,	Kharva,	Koushika,	Kowtika
Karnika	Laala,	Mandana,	Nandaka,
Panchanetra,	Panchasheershna,	Paarvanika,	Panchaaksha,
Paaribhadraka,	Panchapaavaka,	Pingala,	Raakaasya,
Rajamukha,	Roudramukha,	Shankara,	Shaantaka,
Symhikeya,	Uduraaja,	Viraaja,	Vishaghna

Apart from Brihad Vimaan-Shastra there are literatures that describes Mani such as Athha Yantraangaani, Amshu-Bodhini [4] etc. In Vimaan-Shastra 51 types of Mani, their synthesis methods, properties and uses are mentioned.

In ancient Indian traditions, *Mani* (crystal or gem) was more than a material object—it was a conduit for cosmic and spiritual energy. Vedic texts describe Manis as possessing powerful energetic properties influencing both physical and metaphysical realms. They were deeply connected to alchemy, astronomy, and spiritual practices, reflecting an advanced understanding of cosmology and human consciousness. Scholars of *Rasa Shastra* (alchemy) and *Yantra* (mystical machines) attributed specific frequencies to Manis, using them in *Vimaan-Shastra* to regulate energy and propulsion in ancient flying machines. In Ayurveda, Manis were linked to chakra healing and spiritual enlightenment. These crystals were believed to interact dynamically with universal energies, bridging the material and divine. Some interpretations suggest ancient scholars may have intuited properties akin to modern science, such as piezoelectricity and electromagnetic manipulation, reinforcing the notion that Mani was a synthesis of science and spirituality in Indian thought.

4.0 MANI USED IN YANTRAS OF VIMAAN

Mani was used in different Yantras including photo reconnaissance, camouflaging, detection-avoidance, electronic warfare, and remote sensing. (Figure 1). Some yantras were equipped with more than one Mani, such as Shaktyakarshan yantra with six crystals (Bhaaradwaaja, Sanjanika, Sourya, Pingalaka, Shaktipanjaraka, and Pancha-jyotirgarbha), and some used only one Mani e.g. Guha-Garbha Darshan Yantra . Most of the Mani are stored or kept in liquid medium of acids or oil, to either enhance the functioning or for protection. Each of these Mani are artificially synthesized using various plant part extracts, acids, oils, other chemicals and animal parts. For synthesis purpose for each of the Mani different types of furnaces, bellows, crucibles, temperature, and reaction duration were used.

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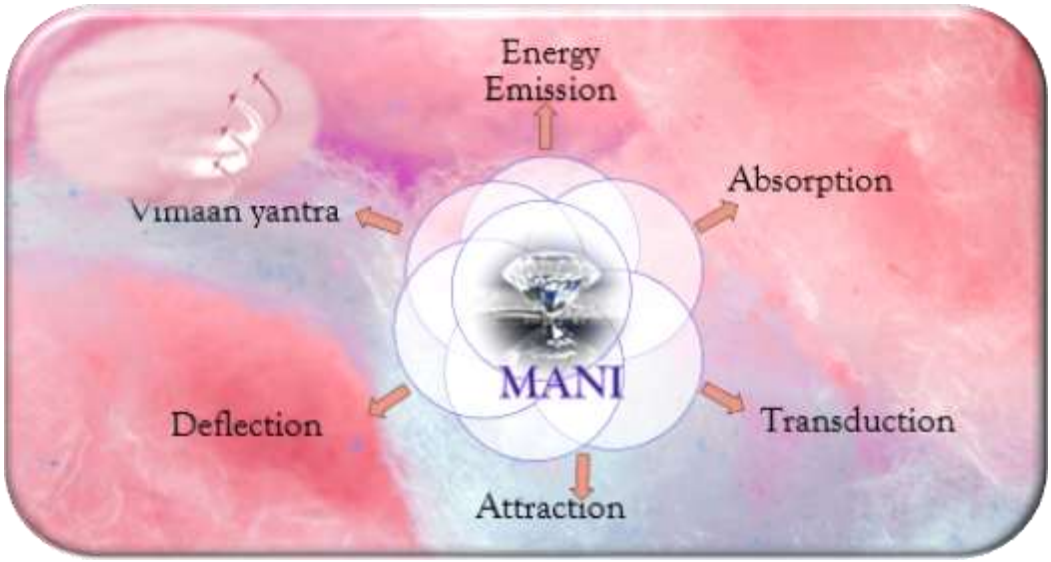


Figure -1: Mani used in different types of yantra of Vimaan

4.1 Mani Used In Defense Yantra

Vimaan-Shastra gives hint of alien aircraft coming from the other galaxies, and need for defence of flying Vimaan, not only from natural calamities but also from enemy attacks. Hence many defensive devices have been installed in the Vimaan such as

Apasamara Dhoom-Prasaran Yantra – for producing and ejecting poisonous fumes to combat enemy, using sandhi-naala-mukha tube. Different types of Dumraprakash is thrown using Vairupya darpan to cause illness to enemy. DHOOMAASYA MANI is a part of this yantra, which helps in performing essential function. The Mani is placed in rubna-acid vessel, filled with Rookshaka bdellium acid (also known as Guggul, is a gum resin obtained from *Commiphora wightii* and *Commiphora africana* plants)[5]. There is also mention of a DHUMAP MANI that Absorbs smoke and Yantra that protects Vimaan from smoke.

Tamo-Garbha Yantra – is made using KRAAKACHAARI-MANI OR ROHINI MANI is used in this yantra. It is darkness capturing and creating device, which protects Vimaan from poisonous fumes projected by enemy. It Creates darkness around Vimaan, making it invisible. It is kept in the front part of the stomach Vimaan, at the north-western side. amo-Garbha yantra works with revolving 2-faced mirrors, collecting solar rays, activating acid in the vessel on the opposite side, of mirrors, allowing solar ray to enter the MANI kept in an acid vessel. By turning a separate wheel in the west, darkness-intensifying mirror begins to function. By operation of a central wheel the rays attracted by the mirror reaches the MANI and envelops it and by operating the main wheel at high speed, darkness envelops the entire Vimaan making it invisible to enemy aircraft as well as ground forces. I believe it generates some sort of Plasma that makes Vimaan invisible.

Pattika Abhraka - safeguard Vimaan against Jwalamukhi fires. Two Manis RAVI-CHUMBAKA MANI, and SHOUNDEERYA MANI placed in acid vessel are used which attracts solar-rays. On a pattika like pivot with revolving wheels with keys and SHOUNDEERYA MANI are fixed [6]. When Jwaalamukhee erupts and reaches towards Vimaan, main switch of the pivot is operated, causing a cold wave through the wires from the acid vessel. This Cold wave passes through 5 wheels to reach the pattika, it draws Jwaalamukhee force and pushes it to the Mani in the centre of the enclosure, the Mani thrusts it outside through the pipe where flame force gets extinguished.

4.2 Mani Used For Detection Yantra

Shabdaakarshana Yantra - is a warning and protecting device. It uses three Mani; RUDANTI MANI, RUCHIKA MANI, and SANJANIKA MANI. With the help of this device and Mani this yantra detects and absorbs sound. The pilot gets In-flight sound information about the presence of birds, quadrupeds, and soldiers to facilitate taking deviation to safer routes during a mission. This device is an audio sensor working on the principle of sensing audio waves within a range of 12 kroshas (27 miles). Evidently its working is around the VHF range. Shabhdaakarshana yantra mentioned here is one of 32 varieties of devices developed under this category. That means other such devices for similar applications under other frequency bands from originators of sound sources had also been conceptualized and developed. Basically it is a receiver-mode communication device. It is placed at the shoulder of Vimaan.

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This yantra is placed on a square or round Peetha of Bidaala metal, with a pivot in center. On either side sound attracting and repeating machines are fitted. 2 ball-shaped domes made of soft leather of Roruva bird is fixed. Between them Suraghaadarsa vessel filled with Katana-drava or Acid is installed. Above acid vessel and between 2 globes, sound spotting rod made of sound capturing Ghantaara metal is fitted with a bunch of wires. It is enclosed in a cover made of Kwanaka glass. In the corner 3 thumb size wheeled knots are fixed. From them to the rod fine strong wires is connected. Enclosing the wires a container made of Kwanaadarsa glass, with small holes is placed. A Drona shaped vessel made of same glass, is placed on top of it.

Guha-Garbha-Darshan Yantra - with the help of CHUMBAK MANI detects arsenal hidden underground. This yantra works like a Photoelectrochemical cell where Solar Energy is converted to Electrical Energy.

For this Photoelectrochemical cell the Pargrandhik Drav (electrolyte), Panchloha, and CHUMBAK MANI (Figure 3) [7] are used. Guha-Garbha Darshan Yantra is assembled by soldering Chumbak Mani with Cu-wire to Panchloha, dipped in electrolyte or Pargrandhikdrav. When Chumbak Mani is exposed to solar radiation it shows current and potential. The image that this electrochemical cell generates is projected on a screen next to the Pilot



Figure–2: Chumbak-Mani synthesized by Sharon et al [7]

4.3 Mani Used For Receiving or Absorbing Radiation Energy

Shaktyakarshan Yantra - absorbs, Heat, Wind, and fire ND protects Vimaan. SOORYA KANTA MANI is used in it. It protects Vimaan from damage caused due to Ripples in Sky by strong blowing wind; it neutralizes and dissipate effects of radiation occurring in the upper regions of atmospheric frictions which generate dangerous forces; it also protects from severe forces caused by ethereal waves, that could be harmful to the structure of the Vimaan. This Yantra uses five more Manis. Positioning of each Mani is very important; they are SANJANIKA MANI is fixed at the middle of the triangular wall; PINGALAKA MANI fixed in the wide mouthed glass globe; BHAARADWAAJA MANI fixed in the opening in the naala-danda; PANCHAJYOTIRGARBHA MANI is fixed in the sulphuric acid vessel, and SHAKTI-PANJARAKA MANI is placed in a mixture of magnet, mercury, mica, and serpent-slough. These 6 Manis absorb sun, wind, and fire related shakti, as well as Rohinee Shakti and Bhadra Shakti and neutralize the dangerous effects Gradually forces are converted to heat; which is dissipated into the atmosphere.

Shirah-Keelaka *(*Hinges*)* – Using AGNIKUTHAARA MANI protects from lightning from clouds striking the Vimaan. AGNIKUTHAARA MANI with metal cage is installed at the crest (head) of Vimaan.

4.4 Mani Used For Receiving or Producing Thermal Energy

Vyshwaanara-Naala.- is one of the six types of pipes used in Vimaan for carrying different products. Vyshwaanara-Naala is one of them which is placed at the navel centre. It provides fire for performing Agnihotra, and Cooking food. It uses PRAJWAALAKA MANI a flame producing crystal is placed Sulphur-brimstone acid. In another vessel filled with Rookshaka bdellium acid, DHOOMAASYA MANI or smoke crystal is placed. Third vessel is filled with Madder root acid, and in it MAHOSHNIKA MANI, or heat producing crystal is placed. On either side of it SINJEERAKA MANI AND DRIDHIKAA MANI are fixed. From each Mani a wire is stretched from the top of the central pole and fixed at the Granthikeela at the foot of the pole. From there up to the Kitchen and Agnihotra spot, a circle is formed and metal tubes are fixed in that. Wires are drawn through the naala to the fire places and fixed to the kharpara (Cu+ Zn) metallic pattika there in. This set up generates heat and flames used for cooking ovens and religious fire places, and generate fires.

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Along with all heat producing Mani and systems, there is mention of COLD PRODUCING MANI or SHANAK MANI or SHANKHA MANI that becomes extremely cool. This Mani is kept in Jwalana acid (Nitric acid).

4.5 Mani Used in Vidyut/Electrical Yantra

Electrical yantra/devices are used for functioning of Vimaan as well as for combating various dangerous forces encountered during flight. Generating and translocating Vidyut/electricity for various function in Vimaan are detailed and complex process

(i) *Vidyut-darpana Yantra*, (ii) *Vidyut-Yantra*, (iii) *Shaktya-akarshana Yantra*, and (iv) *Shabhdaakarshana Yantra*; are used either for generating Vidyut or were run using Vidyut GHARSHAANA-MANI is used in Vidyut Yantra. DARPANA-MANI is used to absorb the sun's energy and transmit it to the acid to convert the absorbed energy into electric current, VIDYUDGAMA-MANI deals with power required for operating Vimaan and its motion.

Shatyaakarshan-Yantra – uses six types of Mani. BHARADWAJA-MANI fixed in the opening in the Naaladanda; SANJANIKA-MANI fixed at the middle of a triangular wall; SOURYA-MANI placed at the foot of the central pole; PINGALAKA-MANI fixed in a wide mouthed glass goblet; SHAKTIPANJARAKA- MANI placed in mixture of magnet, mercury, mica, & serpent-slough; and PANCHAJYOTI GARBHA-MANI fixed in H_2SO_4. These manis are equipped with wires passing through glass tubes and work in synchronicity and they form 3 Shakti/forces: Marthanda Shakti, Rohinee Shakti, and Bhadra Shakti. Marthanda Shakti is focused towards the adverse force of the ethereal current to nullify it so as to protect the Vimaan. Rohinee shakti created force is directed against malefic wind force in the air-route, so that it tames the evil force and protect the Vimaan. Bhadraa Shakti is directed against the evil Roudree Force in the air-route and neutralizes that third destructive force in the sky, this allows smooth passage to Vimaan in the sky.

Shabdaakarshan* or *Shabd-Kendra-Mukha-Yantra - using Vidyut gives hint of some advanced electronics. The spots from which sounds emanate in the sky are called Shabda-kendra or Sound center. The different directions from which the sounds are projected are called Shabda-kendra and the yantra which is meant to control the sounds so projected is called. Shabda-kendramukha yantra, which can tap or detect sounds (of birds or quadrupeds or by men) from the 8 directions of the Vimaan (wired or wireless), from up to 12 krosas or 27 miles. It is fixed in the shoulder of the Vimaan. It uses RUDANTEE-RATIKA MANI.

***Electric Motors* -** converts electrical energy into mechanical energy. Manis used in electric motors are AMRITA-SECHAKA-MANI; AMSHUPA-MANI to improve its performance and efficiency supported by AMSHUPA-MITRA OR AMSHU-MITRA-MANI, & BHAAMUKHA-GRAHINEE-MANI uses absorbed solar-power. All these Mani are part of different Yantra.

Vidyutdwadashaka Yantra- is main electric motor system of Vimaan that uses POUNDRAKA MANI for functioning. It deals with group of 12 forces and uses Saandhanika-motor for generating power (Table 2). Different types of Vidyut are produced in sky by comets and shooting stars. At the 8th region of sky there are 30703221 shooting stars. 8000 of them are prone to lightning, and 12 of them are known as Mahaakaala ((Mahaakaala, Mahaagraasa, Mahaajwalamukha, Khanja. Visphulinga Mukha, Deerghavaala, Mahormika, Sphulinga-vamana, Ganda, Deergha-jihva, Duronaka, and Sarpaasya). From the eyes of Shooting Stars 12 types of lightnings are produced; they are named as Rochishee Daahakaa, Simhee, Patanga, Kaalanemikaa, Lataa, Vrindaa, Rataa, Chandee, Mahormee, Paarvanee, & Mridaa).

Lightning effects of comets are severe in Sharat (Oct. & Nov.) and Vasanta (Mar & Apr), when solar rays & lightnings collide; Ajagara force is created. If Vimaan reaches 20th region of sky, Ajagara force paralyses the plane. To protect against such happenings the Vidyutdwaadashaka Yantra is installed; Attached at the north-east side. This yantra acts as both electric generator & neutralizer of electric charges.

For Fabrication of Vidyut-Dwadashaka Yantra a power-proof cloth Jataghana, having 22 folds is prepared, to cover Vimaan. in each of the folds POUNDRAKA MANI enclosed in wire Cages is fixed. The enveloping cloth cover spreads out, & lightning absorbing power of the cloth gets activated. The POUNDRAKA MANI attract the Ajagara lightning, bifurcate the comet lightning from solar rays, and transmit it to the 8 rods, which transfer the lightning power to the folds of the power proof cloth. In the enclosure, a force called Vidyut-kuthaarika (lightning-axe) gets generated in the acid, which attracts the Comet force from the cloth, and submerges it in the acid. The Ajagara force causes circumnutating motion that darts towards the Pataghana cloth-cover and take refuge, where the blowing wind evaporates & nullifies its effects, thus the Vimaan comes out of danger. [6].

5.0 SYNTHESIS OF MANI

In ancient times, most Mani were synthesized artificially, with various methods documented in historical literature. The flux method and fusion and cooling method were particularly esteemed for creating crystals by mixing different substances, melting them, and allowing them to cool. This process utilized specialized Bhastram (furnaces) and Moosha (crucibles), along with devices for cooling

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and moulding. Additional techniques included sublimation, crystallization, and thermal treatments, showcasing an advanced understanding of material properties and Manipulation.

These methods reflect a sophisticated and advanced approach to crystal synthesis that resonates with contemporary practices in materials science using Mechanical skill, many Laboratory Equipment, knowledge of metallurgy, ingredients in plants, and chemical reactions. However what varies for synthesis of different Manis are Ingredients, Temperature, Reaction and Heating Duration and accordingly type of Bhastrum (Furnace) and Moosha (Crucible).

While the Brihad Vimaan-Shastra by Maharshi Bharadwaj primarily focuses on the construction and operation of Vimaans (flying machines), it also mentions the use of specific materials and methods for creating various components, including Mani (gems or crystals) and their synthesis with special properties. The Mani described in Brihad VimaanShastra are synthetic gems, possibly alluding to ancient knowledge of altering crystal lattices. This is a unique aspect of metallurgy. The synthesis of these crystals involves intricate processes and the use of specific materials. The text mentions processes that involve alchemical transformations, invoking energy fields, and using metals, herbs, and other substances to create or enhance gems with special properties. The text mentions processes that involve alchemical transformations, invoking energy fields, and using metals, herbs, and other substances to create or enhance gems with special properties. Here are some general ideas referenced in interpretations of the text:The synthesis methods used were based on various approaches; such as use of

1. Heat and Fusion - certain metals and minerals are heated and fused together under specific conditions, sometimes invoking mystic incantations, or using energy sources like sunlight or heat generated by special apparatuses.
2. Herbal Infusions - the synthesis of special crystals involves immersing them in liquids prepared from medicinal herbs and other natural extracts. These infusions are believed to imbue the crystals with specific energetic properties.
3. Cosmic Radiation - exposure to specific celestial alignments, such as the rays of the sun or moon, is claimed to enhance the properties of the gems. Certain days or times are recommended for these processes to align with cosmic energies.
4. Combination of Precious Metals - combining of various precious metals such as gold, silver, and mercury, along with gemstones, to create high-energy materials or crystals is described.
5. Agni and Yantras (Energy Devices – i.e. fire and specially designed instruments (Yantras) are described to play a role in refining or synthesizing crystals. These tools focus energy in a manner that alters the crystalline structure or imbues it with specific abilities.
6. Spiritual or Mystical Elements – there are mention of chanting mantras or performing rituals to invoke divine or cosmic energy, which then interacts with the material being synthesized are also mentioned for some Manis.

Here we would like to mention that modern researchers have found the text lacking in concrete scientific principles or evidence that these processes were actually practiced. However, to prove its authenticity we have synthesized and shown functioning of Chumbak Mani as described in Vimaan-Shastra (Sharon et al 2013). Chumbak Mani, is a special types of crystals used in the Guha-Garbha Darshan Yantra of Vimaans. These crystals contribute to the Vimaan's functionality in detecting hidden underground arsenals.

Thus we see that the methods for creating "Mani" or enhanced crystals described in the Brihad Vimaan-Shastra align with alchemical traditions found in many ancient cultures. They emphasize transformation and purification, blending natural elements and metaphysical energies. There are mentions of even mercury as a key component in material synthesis, similar to practices in ancient Indian Rasa Shastra (alchemy). Mercury was thought to be a vital substance for creating transformative materials, possibly a metaphor for energy or motion. These descriptions may hold symbolic meanings, with "Mani" representing refined wisdom or spiritual illumination rather than physical gems.

Contemporary scientists have synthesized several advanced materials inspired by ancient knowledge and modern techniques, reflecting the spirit of crafting "Manis" or unique crystals; e.g. bioinspired crystals and quantum materials, the advanced synthesis techniques have led to crystals with applications in quantum computing and electronics, echoing the metaphysical properties attributed to Manis in ancient texts. High-entropy oxides and new scintillating materials are examples of how ancient philosophies inspire cutting-edge science.

5.1 Devices Used for Mani Synthesis

Brihad Vimaan-Shastra describes mechanical Devices for (i) Heating and focussing energy possibly lenses or mirrors, and machines that generate heat or vibrations for synthesis, (ii) Refining elements, (iii) shaping materials using moulds and cooling. Depending on the type of Manis to be synthesized, use of different types of Bhastrum (furnaces), Bhastrika (bellows), Moosha (crucibles) and Moulds for cooling or setting molten liquid are designed and used to channel specific energies.

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5.1.1 Bhastram (furnaces)

Twenty-six types of Furnaces (Bhastram) or heating equipment are mentioned in Brihad Vimaan-Shastra for the purpose of making parts of yantra, body of Vimaan, alloys etc. It has referred to Kunda-kalpa or the art of furnace construction. The temperature at which these furnaces were used are given in Table 1.

5.1.2 Bhastrika

Bhastrika or Bellows are used to keep flames burning in furnace for heating. Bellows were made of wood and leather. They directed air onto the base of a fire so that the furnaces reach desired temperatures. In modern industry, reciprocating bellows are replaced with motorized blowers. There were16 - types of bellows (Syaad-bhastrikaashtame Shodashee) (Table 1).

5.1.3 Moosha

Though ancient literatures mention of 407 kinds of Moosha or crucibles, only 22 - types of crucibles have been used for making alloys and/or for melting metals, Mani and for yantra (Table 1).

5.1.4 Moulds

Different shapes, and sizes of the moulds are used for the purpose of giving shape to Mani while cooling the molten material.

Table 1: 26-Bhastrum (Furnaces); 16-Bhastrika (Bellows); 22-Moosha (Crucible) Mentioned in Brihad Vimaan-Shastra.

S.N.	BHASTRUM (FURNACE)	BHASTRIKA (BELLOW)	MOOSHA (CRUCIBLE)
1	Aatapa Bhastrum	Gowmukhi Bhastrika	Chanchu Mukha Moosha
2	Alaabu Bhastrum	Mahormi Bhastrika	Karpalaa Moosha
3	Chakramukha Bhastrum	Mooshakasya Bhastrika	Kurma Moosha
4	Chanchu Mukha Bhastrum	Panch Mukhi Bhastrika	Manduka Moosha
5	Chhatree Mukha Bhastrum	Shoorpodara Bhastrika	Mastya Moosha
6	Jambu Mukha Bhastrum	Simhasya Bhastrika	Meayooka Moosha
7	Kakah Bhastrum	Suragha Bhastrika	Mritkundala-Moosha
8	Kula-Kundika Bhastrum	Surashi Bhastrika	Mrugendra Moosha
9	Kurma Bhatram	Kurma Bhastrika	Naalika Moosha
10	Kundodhara Bhastru	Trimuti Bhastrika	Trayambaka Moosha
11	Padma Bhastrum	Two Faced Bhastrika	Padmasya Moosha
12	Panchanana Bhastrum	Ajamukha Bhastrika	Antarmukha Moosha
13	Maghima Bhastrum	Two Winged Bhastrika	Samavargika Moosha
14	Mandooka Bhastrum	Vaaranaasya Bhastrika	Samavargika Moosha
15	Naaga Bhastrum	Vasuki Bhastrika	Sarpasya Moosha
16	Naalika Bhastrum	Vijrimbhana Bhastrika	Sarpmukha Moosha
17	Padma Bhastrum		Shasha-Moosha
17	Padma-Mukha Bhastrum		Shukti Moosha
19	Padmakara Bhastrum		Shundaalaka Moosha
20	Samavargika Bhastrum		Simhika Moosha
21	Shuka-Mukha Bhastrum		Triyuti Moosha
22	Varaaha Bhastrum		Uraana Moosha
23	Varratha-Kunda Bhastrum		
24	Vishwodara Bhastrum		
25	Yasastika Bhastrum		
26	Heating/Boiling Vessel		

5.2 Materials Used for Mani Synthesis

5.2.1 Rasayan Chemicals Metals

Use of thirty types of Alloy/Metal are mentioned in VimaanShastra. The details of these alloys and metals such as the source of these metals from the mines; classification of metals as per properties; conjugation of metals and compounds; impact of metal on human; green synthesis process and their use in different Mani and Yantra are discussed. Chemical materials used in Vimaan can be categorized as Abhra, Darpan, Kancha, and Mani.

5.2.2 Dravak

Dravak or Drav has been conceptualized in relation to Vimaan technology as:

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(i) Electrolytes, since Vimaan were involved in electrical or magnetic propulsion, where Drav was potentially included substance that facilitated the generation or transfer of electrical energy. For example, there are use of acidic Drav described as part of the energy generation or storage mechanisms in these ancient Vimaan. In the context of Mani, some mentions of liquids could correspond to materials that exhibit electrolyte-like properties has been shown in use of Chumbak Mani (Sharon et al 2013).
(ii) Acids were used for the processing and refining of metals or other materials used in the construction of Vimaanespecially for purification purpose.
(iii) Special Liquids with unique properties. Drav is also refer to liquids with special characteristics, such as those used for cooling, lubrication, or even energy generation through chemical reactions.

5.2.3 Taila or Oil

Plant derived oil have been used extensively for storing and synthesis of Mani. Oil used is extracted from various parts of plants, such as deeds, fruits, nuts, leaves, flowers, bark, root, rhizome, wood, resin and gums.

5.2.4 Herbs or Plant Material

Plant parts, plant metabolites and extracts, has been one of the main ingredients in synthesis of all the Mani. Mostly they have been used as source of organic material, inorganic chemicals as ingredient or as catalyst.

5.2.5 Animal Derived Material

Like plant parts, animal parts have also been used as source of Chemicals, which includes, nail, horn, bones, spin, hair etc. for fabricating some Mani.

6.0 CONCLUDING REMARKS

Our interest in the Mani used in Vimaan got impetus from Sharon et al's success in synthesizing and showing applicability of Chumbak-Mani, which was a part of Guha-Garbha Darshan Yantra, that was prepared more than ten decades ago with the support of CSIR.

This article encompasses 51 Mani and knowledge and information available about them. Mani or crystals used in Vimaan-Shastra were not naturally available one, rather they were artificially synthesized as per their application in Vimaan. The uniqueness of developing Mani shows the in-depth knowledge of science, engineering, chemistry, metallurgy, and technology that our ancient scientists had. Manis were used in Yantras loaded on Vimaan for various purpose e.g. for Defense from Torpedo to other weapon for attacking enemy, for making Vimaan Invisible for enemy, to detect hidden arsenals, for deactivating the enemy Vimaan & weapons etc. Manis were also used in Yantra for Protection from natural forces like Rain, Thunder, Wind, Sound, Galactic remains, Comets, intergalactic and interplanetary winds etc. There are Yantras that use more than one type of Mani such as Shaktyakarshan Yantra (used for absorbing, Heat, Wind, Fire forces or Shakti) which uses six types of Mani. Manis were used in Yantra used for Vidyut/Electricity generation in Vimaan. These Manis were synthesized and Maharshi Bharadwaj has referred to various books for this purpose such as Mani-kalpa-pradeepika, Amshu Bodhini, Mani Ratnakar etc.

By integrating ancient wisdom with modern science, we can unlock new applications and insights, revealing our ancestors' profound understanding of material properties.

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