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Puratana Aakasha-Yantrika Nirmana Sadhanavasthu

(Ancient Aero-mechanical manufacturing Materials)

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Abstract

Aerospace materials of ancient ancestors are more highly advanced than compared to that of modern. This paper introduces modern day rediscoveries and Reinventions from Vimana Shashtra. Our team SWASTIK (Scientific Works on Advanced Space Technology Investigators for Knowledge) is group of researchers working on ancient science and technology. Our team's works on different types of ancient materials properties, advanced space radiation, Raja Loha, A high-heat-absorbing alloy used for the bodies of various flying crafts, preparation, properties of each material in its compositions, and our research works on food, clothing of ancient astronauts and Materials for propulsion like sun crystal, Electromagnets reveal that it results in an advanced interplanetary aerospace materials and are compiled by our team SWASTIK.

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1. Introduction

Ancient ancestors had 12 strand DNA, hence had more intelligence than modern humans. Ancient ancestors coded advanced science and technology in Sanskrit texts. In the process of giving their valuable information to the next generations of human race, Maharshi Bharadwaja and several other ancient scientists or Rishis provided us Texts like Vimana Shashtra.

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Nomenclature

| | | |
|----------------|---|-----------------|
| W | = | Weber |
| m | = | Meter |
| ⁰ C | = | Degrees Celsius |

Modern scientists Reinventions from Sanskrit texts indicate the value of texts: CSR Prabhu invented following things: Materials such as Raja Loha, Tamogarbhaloha, Pancha Loha, Araara Tamra, and Badhira Loha. Glasses such as Vidyutdarpana, Ravishakti apakarshana Darpana, Ushna Shakti Apakarshana Darpana and Vimana device, Vakra Prasarana Yantra. Professor Sharon Invented Chumbak Mani and N. G. Dongre invented Dhantapramapana Yantra. Ancient Nano technology related inventions are done and by Sri Maharshi Research Institute of Vedic Technology. They invented a novel process of preparing nano metal and the products thereof.

Throughout the history there have been attempts to reinvent ancient Indian technology, and even in the 21st century humans are successful in reinventing. Hence proving the texts as not mythological and high advanced technological, Our SWASTIK team's works on Ancient astronauts food, clothing and Vimana's Manufacturing materials, and ancient vimana propulsion materials such as Sun crystal and Electromagnets, which are deciphered are described in the following sections.

2. Food

The ancient Indian ancestors' Book "Ashana-Kalpa" or "Principles of Diet" describes the diet of astronauts for survival in space as shown in table 1. The categories of Liquid, Grain and Flesh described in the diet, clearly describes that they were aware of the body mass ratios, water percentage, fat percentage and muscle percentages of Astronauts body. This diet mentioned will maintain the levels of body mass ratios and keep the astronauts healthy and fit for survival in space. Table 1 shows type of food and diet principles are ascribed to "Kalpa sootra" and "Ashana kalpa".

Table 1. Type of food and diet principles are ascribed to "Kalpa sootra" and "Ashana kalpa"

| Season | Liquid | Grain | Flesh |
|-----------------|----------------|--------------------|----------------------|
| Spring-& summer | Buffalo's milk | Tuvar dal | Flesh of sheep |
| Rain-& autumn | Cow's milk | Wheat & Black gram | Flesh of cocks & Hen |
| Winter & snow | Goat's milk | Yava & Black gram | Flesh-of sparrows |

For pilots belonging to the three Dwija castes of Braahmin, Kshatriya and Vyshya, the food will not include flesh. The flesh has been ascribed here in fig 1 this way because they were aware of DNA of categories of human species in different professions etc. The profession connected to calories burnt and energy required by the humans. Thus, humans were divided into several categories so that they can take food according to their body and be healthy. Fig. 1. shows the Categories of Humans according to Professions and activities



Fig. 1. Categories of Humans according to Professions and activities

3. Clothing

Ancient indian ancestors were aware of solar radiations and hence prepared the space suits according to the space weather conditions. Astronauts bones growth and other problems faced in space environment were protected by the spacesuits of ancient astronauts. The impact of the sun's myriad rays on the revolving earth causes seasonal climatic changes. Their effects on human life are either wholesome or unwholesome, as the case may be. The latter cause cramps, drain blood, and denude the body of fat, flesh, and other ingredients. The evil forces of the seasons are reckoned as 25, and affect the skin, bone, flesh, fat, muscles, nerves, joints and other parts of the pilots' body. The clothing provided to them should be such as to safeguard against such effects, and maintain their efficiency. With the materials described, fashioning the apparel and clothes of the pilots handsomely, according to the types of the cloth and requirements the crew, as prescribed by Agnimitra, and handing it to them to wear, they should be conferred benediction, given a protective amulet and then sent out with cheers. It will ward off evils, promote fitness of body and health of mind, and improve their strength, energy, and competence.

- To provide season-compatible clothing
- Attire is specially provided as a protection against harmful forces, energy of beams climatic effects. It is also a means to improve his efficiency, strength and resistance.
- “Pata Samskara Ratnaakara” is the guiding text and preceptor quoted is Gaandhara.
- The raw materials quoted for manufacture of the special fabric include silk, cotton, moss, hair, mica and leather.
- Process-intensive methods of manufacture are stipulated.
- Draping of apparel is stated to be governed by the prescription of Agnimitra.

4. Manufacturing Materials of Rukma Vimana

Rukma vimana was made of Raja Loha and is considered by modern scientists. But it is not completely manufactured and It is observed as a high heat absorbing alloy used for the bodies of various flying crafts. Based on the Vimana shashtra texts, Raja loha composition and our SWASTIK team works, we have found several important properties of Raja Loha as described below.

Ancient manufacturing process was a eco-friendly and because of the extinct plants/trees in modern day, we will have to replace them with other substitutes which can be similar to it. In order to understand the Vimana materials and similarities with modern available materials, our SWASTIK team did Thermal analysis on 3D model of Rukma vimana. These results are illustrated in table.2 and Figure 2a and 2b. Each time different material is used for the vimana, such as Copper, silver, gold, mica, titanium, tungsten and ceramics. (From Reference [8]) Input values taken are:

Heat Flux = 500 W/m^2 , Convection = 500 W/m^2 , Radiation = 1, Silver input temp = 961.8°C , Gold input temp = 1064°C and Temperature = 1000°C for other materials. Convection and Radiation are applied to all faces of vimana but heat flux is applied to the shell part of three floors of vimana where the passengers and pilots are seated. The thermal analysis results are tabulated in table 2

Table 2. Thermal analysis results

| Metals | Copper | Copper Alloy | Silver Input temp = 961.8°C | Gold Input temp = 1064°C | Mica | Titanium Alloy | Tungsten | Ceramics |
|---------------------------|--------|--------------|---|--|--------|----------------|----------|----------|
| Max Temperature | 1001 | 1001 | 962.37 | 1064.6 | 1001.1 | 1001 | 1001 | 1001.1 |
| Max Heat Flux | 540.41 | 521.23 | 470.13 | 428.7 | 2.8175 | 120.03 | 372.48 | 34.146 |
| Max Directional Heat flux | 430.89 | 431.6 | 355.76 | 329.2 | 2.1121 | 78.249 | 243.67 | 23.418 |

The mixture used to make Raja Loha has mica which gives less heat flux compared to ceramics. The proportions of silver, mica, lead, mercury and other materials would result in raja loha which would have properties similar to that of NASA space shuttle heat shield tiles. When these mixtures are taken in exact proportions mentioned in texts we get the perfect raja loha and it can be used for Modern space vehicles. Fig 2(a) and (b) shows the thermal analysis of vimana with gold and silver.

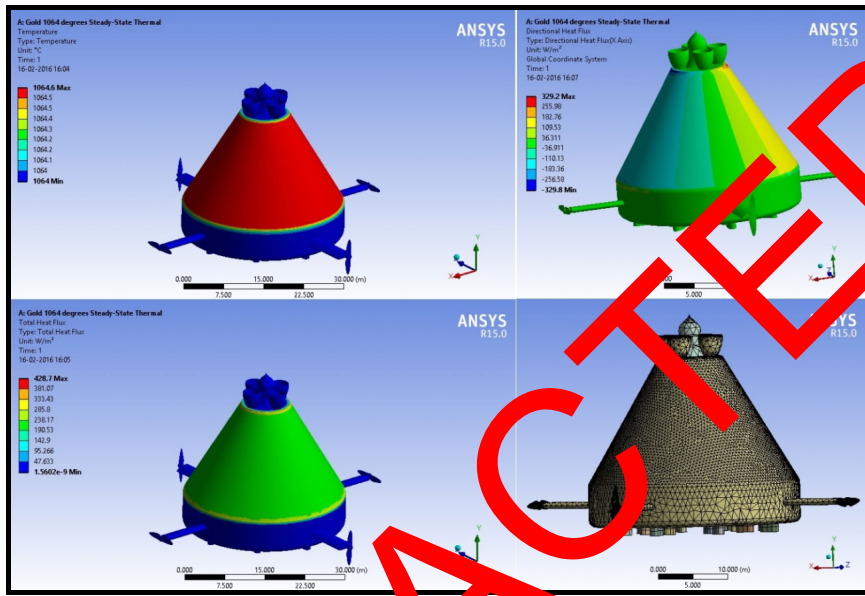


Fig. 2 (a). Thermal analysis results of Rukma vimana using material as gold - Input Temperature 1064 °C

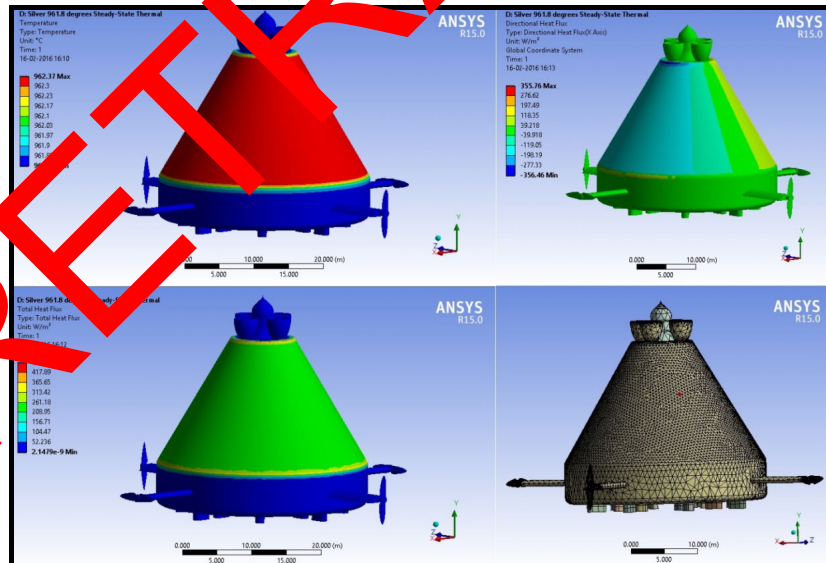


Fig. 2 (b). Thermal analysis results of Rukma vimana using material as Silver - Input Temperature 961.8°C

5. Propulsion materials

5.1 Sun crystal

The energy source of Vimana is sun, solar energy is absorbed by Sun crystal shown fig 3. Yellappa Drawings show the description of electrodes and acids. Inside the dome of sun crystal there are 4 containers of acids and electrodes. This equipment all together produce electricity and distribute to generators and motors of Vimana. Inside the dome of sun crystal there are 4 containers of chemicals which are electrolytes, and cathode anode reactors. The sunlight enters the suncrystal dome, which can absorb high energy from solar rays and the chemical reactions with the help of electrodes process gives result in electricity which can be stored and supplied all over the vimana. The entire equipment of suncrystal is a device that is able to absorb energy from the sun and store electrical energy in the form of chemical energy, and convert that energy into electricity. This working of sun crystal is deciphered by our team SWASTIK, and available data shows that sun crystal is advanced than solar panel used today. Fig. 3 shows sun crystals of Rukma vimana.

The following data are the description for Sun crystal composition:

"Ravi Shakti Apakarshana darpana (glass)": A special glass concentrating (visible light energy in sun light
Status: Already produced and study of optical properties is not yet done.

"Ushna Shakti Apakarshana darpana (glass)": A special glass for concentrating the heat energy in sun light
Status: Fully deciphered and to be produced in the laboratory.

Surya Shaktya Pakarshana yantra or collector of solar energy or Solar heat extracting Yantra:

In order to relieve the excessive cold of the winter months, the Surya shaktyapakarshana yantra should be installed on the vimaana.

Says Yantra Sarvasva,

"In order to protect from the cold of the 4 winter months the solar heat storing machine is now explained. The 27th kind of mirror capable of capturing solar heat is to be used in its making."

It is said in Darpana prakarana: Splavika or alum, mandala or madder root, sea-foam, sarja salt or nation, sand, mercury, garada or aconite, kishor or wild quorice, gandhaka or sulphur brimstone, karbura or yellow orpiment, praanakshaara or ammonium chloride, in the proportion of 12, 1, 5, 1, 13, 12, 8, 10, 27, 4, 3, 7, 8, 5, 1, 5, 8, 3, 9, 2, purified, to be filled in antarmukha crucible placing it in shuka-mukha furnace, and boded. Then pour it into antarmukha yantra or vessel and turn the churning key. When cooled in the mould a fine, light, strong, golden. coloured, solar heat collecting glass will be formed.



Fig. 3. Sun Crystal of Rukma vimana

5.4 Problems faced by mercury ion engine:

Early ion engines used mercury or cesium instead of xenon as propellants. (Glenn researchers had worked on cesium ion engine technology in the mid 1950's.) But both proved to be difficult to work with. At room temperature, mercury is a liquid and cesium is a solid, making them easy to store. But both had to be heated to turn them into gases. Then there was the cleanup. After exiting the ion engine, some mercury or cesium atoms would condense onto the ground test hardware, causing numerous cleanup difficulties. In the 1970's, NASA managers decided that if ion propulsion research was to continue, it would have to be environmentally clean and less hazardous. Glenn researchers soon turned to xenon as a cleaner, simpler fuel for ion engines, with many of the same characteristics as mercury. One of the first xenon ion-engine-like devices ever flown was a Hughes Research Laboratories design launched in 1979 on the Air Force Geophysics Laboratory's Spacecraft Charging at High Altitude (SCATHA) satellite. It was used, not to propel the spacecraft, but to change its electrical charge. Researchers then studied the effects of the "charging" on spacecraft system performance. In 1997, Hughes launched the first commercial use of a xenon ion engine on the communications satellite PanAmSat 5. This ion engine is used for station keeping that is, keeping the satellite in its proper orbit and orientation with respect to Earth. But according to the study, if pure mercury is used, it could give better efficiency.

Table 3. Flight Thrusters efficiency

| Flight Thrusters | Beam diameter cm | Propellant | Specific Impulse, s | V_D , V | η , % |
|------------------|------------------|------------|---------------------|-----------|------------|
| SERT I | 10 | Mercury | 5000 | 46 | 90 |
| SERT II | 15 | Mercury | 4200 | 37 | 85 |
| XIPS-13 | 13 | Xenon | 2565 | 25 | 90 |

5.5 Mercury in Indian Vimanas

Vimanas of Ancient India used mercury as fuel in their ion engines. The mercury used was a purified one. Mercury has been known to Indians 11000 years ago. The Atharva Samhita gives the 16 steps to purify Mercury and make a SOLID Shiva Lingam out of it as shown in Fig 5. For the one hundred and ninetieth "richa" (verse) of the Rig Veda and the aeronautical treatise of Bharadwaja mention that flying machines came into full operation when the power of the sun's rays, mercury and another chemical called "Naksha rassa" were blended together. This energy was, it seems, stored in something like an accumulator or storage batteries. The Vedas refer to eight different engines in the plane and Bharadwaja adds that they are worked by electricity. Fig.5 shows Shiva Linga made of mercury.



Fig. 5. Shiva Linga made of mercury

5.6 Rasa Shashtra

In Ayurvedic medicine, the traditional medical lore of Hinduism, rasa shastra is a process by which various metals and other substances, including mercury, are purified and combined with herbs in an attempt to treat illnesses. Methods The methods of rasa shastra are contained in a number of Ayurvedic texts, including the Charaka Samhita and Susruta Samhita. An important feature is the use of metals, including several that are considered to be toxic in evidence-based medicine. In addition to mercury, gold, silver, iron, copper, tin, lead, zinc and bell metal are used. In addition to these metals, salts and other substances such as coral, seashells, and feathers are also used. The usual means used to administer these substances is by preparations called bhasma, Sanskrit for "ash". Calcination, which is described in the literature of the art as shodhana, "purification", is the process used to prepare a bhasma for administration. Sublimation and the preparation of a mercury sulfide are also in use in the preparation of its materia medica. A variety of methods are used to achieve this. One involves the heating of thin sheets of metal and then immersing them in oil (taila), extract (takra), cow urine (gomutra) and other substances. Others are obtained in crucibles heated with fires of cow dung (puttam). Ayurvedic practitioners believe that this process of purification removes undesirable qualities and enhances their therapeutic power.

Toxicity

Modern medicine finds that mercury is inherently toxic, and that its toxicity is not due to the presence of impurities. While mercury does have anti-microbial properties, and formerly was widely used in Western medicine, its toxicity does not warrant the risk of using it as a health product in most circumstances. The Centers for Disease Control and Prevention have also reported a number of cases of lead poisoning associated with Ayurvedic medicine. Other incidents of heavy metal poisoning have been attributed to the use of rasa shastra compounds in the United States, and arsenic has also been found in some of the preparations, which have been marketed in the United States under trade names such as "AyurRelief", "Glucorite", "Aloe nil", "Energize", "Cold Aid", and "Lean Plus". Ayurvedic practitioners claim that these reports of toxicity are due to failure to follow traditional practices in the mass production of these preparations for sale, but modern medicine finds that not only mercury, but also lead is inherently toxic.

5.7 Solution by our SWASTIK team

In NASA after exiting the mercury ion engine, some mercury or caesium atoms would condense onto the ground test hardware, causing numerous clean-up difficulties. In the 1970's, NASA managers decided that if ion propulsion research was to continue, it would have to be environmentally clean and less hazardous. Glenn researchers soon turned to xenon as a cleaner, simpler fuel for ion engines, with many of the same characteristics as mercury. But using Mercury in ion engine, has given more specific impulse when compared to xenon. And using the purified mercury will boost up the efficiency of ion engine. The solution to the problem faced by NASA mercury ion engine, can be found in ancient science of purifying metals known as Rasa Shastra. We can improve efficiency of ion engines, by using mercury purified by Rasa Shastra. If mercury is purified and used in ion engines then compared to xenon ion engine, Mercury ion engines would be a better choice for space exploration as it will give a better specific impulse according to the experiments and more over there will be much better efficiency even with larger beam diameter used in ion engines. Upon considering all the experiments done in modern world, there is a clear path laid in front of us, describing that the ancient writings are not myth anymore, they are not science fiction anymore. So, by further studying on Rasa Shashtra and implementing the knowledge for experiments on mercury, we can use mercury in Ion Engine, as we are able to get more efficiency. This can make space exploration much simpler. By deeper understanding and practical experiments on the book Yantra Sarvaswa and Rasa shashtra, many more advanced technology can be Rediscovered and Reinvented, which will modify the world into much better way.

6. Nanomaterials - Nanotechnology in Ancient India

Ayurvedic Bhasma - A nano preparation: Bhasma used in Ayurveda for treatment of various disease for the past several centuries is the oldest form of nanotechnology as shown in fig 6. Bhasma is ancient but ultra modern nanomedicine prepared from metal after scientific process to raw material into the therapeutically active form.

This is done through classical process by repeated incineration and grinding with some herbal juice and other specified drug. Due to its small size basic character gets changed. It is mainly due to change in electrical, thermal, inorganic, optical, chemical and biological behaviour. Swarna Bhasma is therapeutic form of gold metal of nanosize particle. When evacuated by various tool and techniques like AFM (atomic force microscope), SEM (scanning electron microscope), it was found that size of particle was 56 nm. Analysis by FT-IR and XRD shows that pure Au in Zero valency state. The future evolution is shown schematically in Fig.6.



Fig. 6. Ancient advanced nanotechnology

7. Conclusion

Upon considering all the experiments done in present day, we can understand that we are lacking in technology when compared with our ancient ancestors. It is clear that vedic texts are not mythology, but historical documents on advanced technology. So by further studying on Rasa Shashtra and implementing the knowledge for experiments on mercury, we can use purified mercury in Ion Engine, as we are able to get more efficiency. This can make space exploration much simpler. Among deciphered Vimana materials mentioned, the ancient materials can be used during manufacturing of space vehicles for radiation resisting and deciphered glass can be used for spacecraft to extract energy from sun in outer space. The analysis done by our SWASTIK research team hence proves that there are high chances of space radiation resisting which can be better for future space missions. Also further research on our findings of Sun crystal and electromagnets for propulsion will entirely change the existing complications in technology and makes the space exploration much easier.

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