

# ONE WEEK ONE LAB | GI-tagging: A feather in cap of Basohli Chitrakala

It is a matter of fact that CSIR-NPL is the custodian of Indian Standard Time (IST), generated using an atomic timescale consisting of Cesium atomic clocks and Hydrogen masers. Not just that, IST is kept traceable within a few nanoseconds to the international reference time UTC (Coordinated Universal Time) using ultra-precise satellite links. But least is aware that how CSIR-NPL standardizes the measurements of gas and airborne particles for monitoring atmospheric pollution? How 'election ink' or the indelible ink used during elections to mark out voters who have exercised their franchise, was developed at CSIR-NPL in 1952, which is considered one of the most significant contributions to Indian democracy? To get first-hand acquaintance with all these wonders of science at CSIR-NPL, it opened its doors to general public under the 'One Week, One Lab' programme from April 17-21, 2023.

Union Minister (S&T) Dr Jitendra Singh recently announced a unique campaign, called 'One Week -One Lab' in which all labs of Council of Scientific and Industrial Research (CSIR) would reach out to public to not only showcase their technologies but also to ignite the minds of young innovators, students, start-ups, academia, and industry to look for opportunities through deep tech ventures. In the 'One Week, One Lab' campaign, in successive weeks, each of the CSIR labs showcased their exclusive innovations and technological breakthroughs to the people of India. The CSIR laboratories are unique and specialize in the specific areas which span from genome to geology, food to fuel, minerals to materials, and so on.

CSIR-NPL Director, Prof Venugopal Achanta said, "CSIR-National Physical Laboratory (NPL) organized the One Week- One Lab program from 17-21 April, 2023. The aim of this program was to create awareness about the available technologies and services present at NPL among potential stakeholders, to provide solutions to societal problems, to sensitize the masses about importance of precise measurements and to develop the scientific temperament among masses especially amongst students who are the future of the country". CSIR-National Physical Laboratory (NPL-India) is mandated to be India's "National Metrology Institute" (NMI) by the act of Parliament and is the custodian of "National Standards" with a responsibility of the dissemination of measurements to the needs of the Country. CSIR-NPL is critically engaged in the development of India's measurement standards that are internationally accepted and disseminating the measurement capabilities to industry, government, strategic and academia that underpin the India's prosperity and quality of life. It preserves and maintains the measurement standards of length, mass, temperature etc including the task of dissemination of the Indian Standard Time (IST). NPL is conducting multidisciplinary R&D with a mission to establish the futuristic quantum standards and upcoming technologies so that India remains on par with international measurement laboratories. It is developing sophisticated analytical equipment (i.e. import substitutes) under 'Make in India' programme to cater the ever increasing demands of emerging India and training of young scientists and industry personnel in the area of measurements under "Skill India" programme.

The 'One Week-One Lab' program at CSIR-NPL comprising of several different activities, started on April 14, 2023 at Press Club of India (PCI), New Delhi. The campaign was inaugurated on April 17, by Dr Jitendra Singh in presence of Director General- CSIR, Dr N Kalaiselvi. The major focus of the inaugural day was the Interaction with School/College students. The students from various schools and colleges in Delhi-NCR participated in the program. Quiz competition and lab visits were two of the many activities scheduled for the day. The students also got opportunity to interact with the NPL scientists," added Prof Achanta. From April 18-20, three days Start-up/MSME/Industry Meet was held. The aim of this event was to showcase various services extended by NPL to industries. In this event, all stakeholders have been invited whom NPL has helped/connected/provided technological support/consultancy/services. During the event each day, more than 20 industries joined where they not only showcased their technologies/services (where NPL has contributed) but also talked about NPL's scientific and technological help they have received. Several other crucial issues were discussed related to innovation framework and ecosystem. MoUs with 4 new industry partners were also signed for technology transfer and development.

Metrology Conclave was also organized where a Handbook on Advances in Metrology at CSIR-NPL was released. CSIR-NPL's Role and Efforts in the field of Metrology, CSIR-NPL Road Map for Future and Developing National and International Collaborations, panel discussion are the other attributes of the metrology conclave. R&D Conclave &Women in STEM is planned where eminent scientists of the NPL family and alumni shared their vision and showcased the role of CSIR-NPL in recent advancements in science and technology. The focus of the event was on Women's empowerment during the above-said event and a series of activities were conducted by women scientists to discuss the recent trend in Research and Development, Challenges, and Opportunities for Women in STEM Careers. A documentary film renowned Women Scientists in India was also showcased.

## ■ SHIV KUMAR PADHA

It is a proud moment for the entire Jammu and Kashmir UT in general and the artists involved in the preparation, propagation and rejuvenation of the world famous Basohli Chitrakala in particular. Finally the contender, NGO Vishawsthal, has succeeded in its endeavor in getting the GI tag granted in favour of Basohli Chitrakala exclusively a proprietary of Basohli artists engaged in the field. But for the help and cooperation of Manoj Sinha LG J&K UT, Dr Jitendra Singh Union MoS in PM Office, Handicraft department of UT and the NABARD this Herculean Job would have been impossible. In the absence of this tagging the Specimens of Basohli Chitrakala have either been hijacked or downloaded from Google and sold in the market by every Tom, Dick and Harry blatantly. With result the paintings not belonging to Basohli school of art and paintings were sold in the market at exorbitant rates tarnishing and affecting the name and fame of Basohli miniature paintings in the world.

Pertinently, geographical indications (GI) is a form of intellectual property right that identifies goods originating from a specific geographical location and having a distinct nature, quality and characteristics linked to that location. The process of GI Tagging for Basohli Paintings was initiated by NABARD in consultation with the department of Handicrafts and Handlooms in December 2020, during the times of COVID. The GI-tags have now finally been granted the wood craft of Ladakh and Basohli Paintings of J&K UT after a long legal process. In this regard Union Minister of Commerce and Industry Piyush Goel congratulated the country on getting 33 GI-tags, the highest in a single year. Pertinently Basohli and Ladakh are the only two places in the two UTs which got tags for Paintings and wood craft respectively. The reasons behind granting the GI Tag for Basohli Chitrakala are not hidden from anybody rather they have become world famous and has brought name and fame not for the UT but for the entire countrymen. In order to make it more clear and comprehensive, the long journey of Basohli Chitrakala is being laid down for the information of the readers.

Basohli is widely known for its miniature paintings, which is considered as the first school of Pahari painting developed in the fourth quarter of the 17th century. The earliest painting in this style have been dated to the time of Raja Kirpal Pal (1678-93), where Rasmanjari (1695), The Gita Govinda (1730) and Ramayana were prepared for Raja Bhoopender Pal in 1816. A number of centers such as Basohli, Mankot, Chamba and Nurpur have been producing paintings in the traditional form. The expansion of Basohli style to Mankot was result of marriage of Raja Kirpal Pal to a Mankot princess. All the paintings discovered in the Mankot collection belong to Raja Kirpal Pal period. The specimen and the replicas of the Basohli paintings are showcased in all the museums spread over the world and have earned a good reputation. Before proceeding any further, it is pertinent to familiarize the readers about the series of paintings under the themes, Rasmanjari, Geeta Govind and Ragmala in Basohli style.

The Rasmanjari series, prepared for Raja Kirpal Pal, are the earliest dated material known from Basohli. Rasmanjari by Bhanu Dutta, is a Sanskrit love lyric revolving around the love of Sri Krishna and Radha. At least, painting with three series of this theme was produced in the hills which show that the Basohli painters were familiar with the text. According to the information available, three Rasmanjari sets were divided into different groups. Group A is in the Museum of Fine Arts in Boston, the Victoria and Albert Museum in London, the Dogra art gallery Jammu, SPS Museum Srinagar and Punjab Museum in Chandigarh.

Group B is showcased in Bharat Kala Bhavan in Banaras and National Museum Delhi.

Geeta Govinda: It is one of the greatest achievements of Basohli School. Geeta Govinda was the successful expression of the poetic feeling of the author Jayadeva, the spirit of Vaishnavism and devotion to Lord Krishna. Geeta Govinda was a series painted in a much more sophisticated manner, differing in color scheme and the drawings from the earlier group, showcasing a mature stage of the Basohli style. The text offers a more picturesque background for the love play of Radha and Krishna, it include scenes from the forest of Varindavan and on the banks of river Yamuna. The 1730 Geeta Govinda was not a royal copy, but it was prepared for a noble lady, Malini by the painter Manku as stated in the inscription. The inscribed leaf is in the Lahore Museum, Pakistan.

Ragmala Paintings: The Ragmala series are scattered in different collections: The Museum of fine arts, Boston, The Victoria and Albert Museum London, Bharat Kala Bhavan Varanasi, The metropolitan Museum of Art, New York and Karl Khandelwala, Bombay. In these paintings, we find that the architectural details have been replaced by the open air scenes. The drapery is less transparent and heavy shading is avoided. The sky is occasionally shown with vaulted strips. To purchase, possess and gift the replicas or the original work of Basohli chitrakala and showcase them in their houses, has become a craze and status symbol of modern society the world over. The curiosity of every visitor is to visit all those museums in the country where the specimens of Basohli chitrakala are showcased. The collections of Basohli chitrakala are exhibited in the famous art galleries of Bhuri Singh Museum of Chamba, National Museum Delhi, Amar Palace Jammu, Rashtrapati Bhavan Delhi, Central Museum Lahore, Bhavat museum of London, Boston Museum of America, Loodrya gallery of France and other number of small art museums all over the world. This art of miniature paintings has carved out a unique place for Basohli in the world. Different historians have given different explanations regarding the origin of this chitrakala. The first citation about Basohli chitrakala was found in the archaeological survey of India for the year 1918-19 which states "a series of old paintings of Basohli school were purchased, and the curator concludes that Basohli school is of pre Mughal origin". In 1916, Coomara swami termed these paintings as of the Dogra School of Arts, Jammu but in reality these chitras originally belonged to Basohli. Some of the historians are of the view that Basohli paintings have got much resemblance with those of Udaipur and Gujarat. In the earliest periods, the artist's style was called as the primitive paintings of Basohli. According to Goetz, the middle of 17th century paintings are of Basohli primitive style with aquiline noses and receding foreheads.

Basohli style emerged as the result of the marriage of the folk art of hills with Mughal technique. The transparent dress of women and clothes of men are of Mughal style, while the facial formula is local with its root in the local folk. The side fastening frockcoat with a sash round the waist is the dress of the men, while the choli, a tight-fitting bodice covering the breasts, and a gagra-like skirt covered with a sari is the dress of women in the Basohli paintings.

There is difference of opinion between the researchers and experts over the origin of Basohli art of paintings. Some are of the opinion that the Basohli chitrakala was at its peak during the regime of Raja Kirpal Pal from 1678 to 1693. Historian Kahan Singh Billowria wrote that gifted handmade colored portraits of Raja Bhoopat Pal, by his son Sangram Pal, to the Emperor Shah Jahan at the Delhi Durbat indicates that the art of Basohli

chitrakala exist prior to the regime of Bhoopat Pal. Raja Sangram Pal brought some artists from Delhi and settled them in Basohli which helped in boosting the art. Basohli Chitrakala flourished to its maximum level under the patronage of Raja Kirpal Pal because he frequently visited Delhi Durbat and brought with him expertise in order to bring refinement and beauty in the kala.

Raja Bhoopat Pal's son Sangram Pal was seated on the thrown at the age of seven in 1635 A.D. He was one of the most handsome princes of the hilly kingdoms of the north. Mughal Emperor Shah Jahan invited the prince in his court, where he accorded warm welcome. All the courtiers of the durbat fixed their eyes on the face of the young prince and kept staring motionless. Basohli prince became a friend of Mughal prince Dara Shikoh. The inmates of the woman compartment insisted to see the prince who was gifted with such a divine beauty. The Begums in the harem were taken aback and stunned when they saw a human being gifted with such a rare beauty. Raja Sangram Pal enjoyed the protocol of a royal guest so long he stayed in the royal durbat of Emperor. During his stay with the royal family he came across with Mughal artists, some of whom he brought to Basohli on his return from the Delhi Durbat. Raja Kirpal Pal was also a scholar and lover of art. During his regime, Pt. Shiv Kantha and Pt Shiv Parsad wrote two volumes on Ayurveda pertaining to Charka, related to the science of medicines and other Sushruta about surgery in Ayurveda. It is believed that both of these volumes are lying in the custody of the Padha family of the Raj vaid. Basohli Chitrakala took big leaps during the periods of Raja Dheeraj Pal, Medni Pal, Jeet Pal, Amrit Pal, Vijay Pal and Mehander Pal.

Basohli paintings are unique in nature which can be easily distinguished from other styles. The painter describes all the facts clearly and boldly in the picture. The poetic theme of Rasmanjari and Geeta Govinda is depicted in most simple way. The borders of the paintings are deep red and rarely yellow. The colors are used symbolically; the yellow is used for spring, sun shine and mango blossoms. Blue is the color of Krishna, god of cow herd and of the dark clouds. Red is the colour of love which suits to the passionate themes. The contrast use of the primary colors red, blue and yellow in the Basohli painting is delightful. The use of different colors in Geeta Govinda is remarkable and presents a magic of colors and its emotional appeal. Another quality of the Basohli paintings is the liberal use of gold and silver paints, gold is used for embroidery and in ornaments, whereas, silver is used in dress, windows and pillars. Pearls of the necklace are depicted by the raised paints. In Rasmanjari, heavy clouds are shown in layers with snake like lines in gold. Light rain is shown by pearl like streaks and heavy rains by straight white lines. The trees depicted in the Basohli paintings are also symbolical; love sick heroines are shown under the drooping branches of willows, ripe mangoes, a symbol of charm of women.

The cattle are also the integral part of the Basohli paintings. In Kangra style, the cattle are well fed and healthy whereas in the Basohli style they are shown lean, feeble with large ears, twisted horns and wild eyes of the breed which can be found in Jammu. Basohli painters evolved a new facial formula of their own. Basohli faces have receding forehead, high nose and lotus like eyes. The ornaments and the drapery are skillfully painted to enhance the feminine beauty.

The whole chitrakala of Basohli is rich with the Bhanu Dutta's 14th century Rasmanjari, 12th century Jaydeva's Geeta Govinda, Nal Damyanti, Baramas and the scenes from the life of Bal Krishna. The text of Rasmanjari is a flavor of love between Nayaka-Nayak-bheda,

whereas, Geeta Govinda has been compared with Solomon's Song of Songs. In order to see the creation of god and to realize the hollowness of the world (Chitra Rasmanjari) containing pictures on the wealth of mind was prepared by Raja Kirpal Pal by Devi Dasa in 1752. The most astonishing quality of Basohli painting is the use of homemade colors made from the roots, flowers, leaves and barks of the trees. Various minerals clays were also used in the colours. The brush used during painting was home made from the hairs taken from the tail of the squirrel.

Where on the one hand Jammu and Kashmir Govt. always seems serious about promoting the Kashmiri art in order to keep it alive by financing the art and craft of making, qalines, namde gabbe, paper machhi, pashmina shawls and embroidery work. On the other hand, the government has completely overlooked the need of reviving, developing and devising some means to make it a subject in the school curriculum of the state so that the demand of the replicas of Basohli chitrakala can be met easily. A NGO 'Vishwasthal' has come forward for the rescue of the dying art and to keep it alive as the symbol of recognition for the Jammu region. Its volunteers are putting in great efforts to prepare replicas of the old paintings, but due to the limited resources they cannot meet the demand from within and outside the country. The efforts of one officer, rich with aesthetic sense and a lover of fine arts, took the noble work of reviving and rejuvenating the dying art and started the painting school at Basohli on the trial basis.

Inspired by the initiative of Parvez Dewan, Basohli School of Arts was established by the NGO Vishwasthal which has been producing many young artists in Basohli Chitrakala every year. These artists are working in different parts of the state and preparing the life like replicas and earning in thousands per portrait. Many young aspirants have made Basohli art as their hobby and passion and earning a lot by selling their paintings at exorbitant rates in the national and international market. Many young artists are managing their own studios, where they produce the exact copies of the original art. It is pertinent to mention here that Bakshi Ghulam Mohammad, the then Prime Minister of Jammu and Kashmir and Dr Karan Singh, the Sadr-e-Riasat were presented bundles of the original invaluable paintings as a gift from the Basohli people on their visit to the town. Similarly, one similar bundle of Basohli painting was presented to Gall Breth and the US Ambassador to India by the old headman of Basohli Jagan Nath Padha, which the Ambassador took to London and showcased them in the Barton Museum of London. The career in the Basohli Paintings and Basohli art is both respectful and paying because it is the seller who tags its price and the buyer has to pay for it. Basohli Painting and miniature painting is a new and flourishing opportunity for the growing number of skilled, gifted and intelligent unemployed youth in the state with no or negligible investment. What matters in this business are the clarity, precision, vision, passion, concentration and dedication which every young person can develop, if someone intends to excel and make it as their career in life. It is pertinent to mention that the Basohli Chitrakala has been made theme of the Jammu and Kashmir Tableau during 2019 Republic day parade on the Raj Path, Delhi which is a matter of proud for every person of Jammu and Kashmir. The task of the revival of Basohli painting is neither costly nor impossible; it needs only the sincere commitment on the part of the govt. in power. The government should encourage the youth to make their career in Basohli chitrakala with twin aims of earning respectfully and keeping the art alive forever.

(The author is a social activist from Basohli).

# Sustainable Freshwater Management

## ■ DR BANARSI LAL

Water is the most precious resource on the earth. It is a finite natural resource on the earth. As the global population is increasing at an alarmingly rate so does the demand for water and this is depleting the water and other natural resources. There is dire need to tackle the global water crisis. By using the water more efficiently we can reduce the green house gases. We must use water judiciously with more responsibility. We need to balance the use of water while ensuring the poorest people don't left behind. Water is indispensable for the existence of animal and plant eco-systems and is an essential element in the development of any nation. It is the most vital resource for the existence of life on earth. No other natural resource is having such an overwhelming influence as water has. Earth three-fourths surface is covered by the oceans. Freshwater constitutes a very small proportion of this enormous quantity of water. Only 2.7 per cent of the total water available on the earth is fresh water out of which 75.2 per cent lies frozen in Polar Regions and another 22.6 per cent is present as ground water. Remaining water is available in rivers, lakes, atmosphere water and soil and vegetation. Climate change increases the intensity and frequency of natural disasters and water-related extreme events such as rainfall, droughts, floods etc.

India is the seventh largest country in the

world with a total area of 3,287,263 Sq Km. India accounts for about 2.4 per cent of the world's geographical area, 4 per cent of the world's water resources and 17.7 per cent of the world's population. Globally, 785 million people do not have access to basic drinking water facilities. Water is often contaminated from urban, industrial and agricultural pollutants. Many of those who lack access to basic water services also live in conflict-affected states with poor governance, high rates of poverty, insecure tenure and weak institutions. The pressure on freshwater resources is rising including the drinking water supplies. There is need to increase the investments that can sustainably manage and equitably allocate water supplies, expand watershed protection and restoration. There is dire need to provide the basic facilities of safe and reliable drinking water even to the poorest amongst the poor of the nation for a good health and livelihood. The reliable provision and management of drinking water also develop credibility in local and national authorities. The rapid pace of urbanization also requires attention to urban services particularly clean drinking water. There is dire need to provide adequate clean drinking water to the people, schools and clinics. It is predicted that upto, 5.7 billion people could be living in areas where water is scarce for at least one month a year. Climate-resilient water supply and sanitation can save the lives of more

than 3, 60,000 infants every year. It is also predicted that by 2040, global energy demand is projected to increase by over 25 per cent and water demand is expected to increase by more than by 50 per cent. With the extreme weather changes, rainfall has become unpredictable affecting the livelihood of millions of farmers especially in the developing countries. If water is used efficiently in agriculture then crops production can be increased and land, water and ecosystem degradation can be prevented. Every year, there are around 250 million cases of water borne diseases with about 5-10 million deaths. It is not only the human beings who are threatened by water shortages and pollution but other living species on the earth are badly affected.

About half of the world's wetlands have been destroyed in the last 100 years. Two-fifths of the fish are freshwater species and of these about 20 per cent are threatened, endangered or have become extinct in recent decades. The freshwater demand is increasing not only because of demographic pressures but also because of improved living standards, urbanisation and industrial growth. The world's thirst for water is likely to become one of the most important issues of the 21st century. Global water consumption is increasing more than the rate of population growth. In some areas, water withdrawals are so high relative to supply that surface water supplies are literally shrinking

and ground water reserves are being depleted faster than they can be replenished. Water tables are dropping due to overexploitation of ground water and some rivers often become dry before they reach the sea. It has been observed that the amount of water available per person in India has decreased steadily over a period of time. Water is scarce even for drinking purpose. India already is facing an alarming situation and its fragile water resources are stressed and depleting while various sectorial demands are growing rapidly even as about 200 million people in the country do not have access to safe drinking water and nearly 1.5 million children under five die each year due to water-borne diseases. The droughts conditions in several parts of the country are on the rise and disputes over sharing of the water resources are increasing. If the available freshwater resources in India are not managed properly India can face a severe water crisis. At present, six of India's 20 major river basins already fall into water scarce category. It is expected that by the year 2025, five more basins will be water scarce. It is expected that by the year 2025, India can face a severe water shortage it is predicted that within a few decades availability of water in the country will be about 1700 to 2000 cubic meters as per person as against the world average of 5000 to 9000 cubic meters per person. India is heading towards a freshwater crisis due to improper management of water

resources and environmental degradation which has led to lack of access to safe water supply to millions of people.

The freshwater crisis is already evident in many parts of the country varying in scale and intensity depending mainly on the time of the year. Ground water crisis has been caused by human actions. Acute scarcity of water may cause the different nations to wage a new world war. There is need of new strategies for water management and development. Major institutional policies and technological initiatives are required to ensure efficient, socially equitable and environmentally suitable management of water resources. Water management programmes should be implemented in a systematic way. Immediate steps are needed for drastic reduction of wastage of water in all sectors. There is also need to frame an appropriate water policy and equally important indomitable conscience of water users to utilize water judiciously. Climate policy makers should put water at the heart of action plans. Water can help to fight the climate change. There is need to focus on sustainable, affordable and scalable water and sanitation solutions. There is a need to make more efforts on water sustainability. We all need to join our hands together to save water and protect the environment.

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