



## ROLE OF NANO TECHNOLOGY AND COMMERCIALISATION OF IPR ISSUES -TIGER LEAPS FOR NANO TECHNOLOGY PATENTING IN INDIA

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### Abstract

*There has arisen an unanswered question that does need foray and discussion in the field of Nano technology patenting as prevailing in India in the post TRIPS agreement 1994 (WTO / WIPO) regime whether Indian IPRS regime is not only equipped but well equipped to handle Nano technology suitably enough in terms of law and infrastructure to implement and launched the both themselves? Whether the regime strikes a super balance between public/social interests of inventions? After globalisation the sickness of regime has not been able to strike in consonance with globe. The paper attempts and seeks/or search to challenges which Nano technology patenting can essentially being addressed despite too much lack of vulnerability looms large in India.*

**Key Words:** Nano technology, cancer drugs, pharmaceuticals, utility patents, TRIPS, Strasbourg agreement, 1979, Sustainable Development.

“Anxiety about proper Nano Technology regulation to protect health, safety & environment is mounting. It represents an interdisciplinary field and so depending on the specific technology or product in question advanced understanding to materials, science, physics, chemistry and biology all may be required to analysis the risk” – Giegorg mandel – Technology wars: The failure of Democracy process.

### 1.0 Introduction

#### 1.1 Definition

Nano technology is the science and technology of building things from the bottom up – one atom or molecule at a time in contrast with industrial technologies that operate from the top to down. Nano technology attempts to go for beyond that natural mechanism permits and controlling molecular structures that are not manipulate by organic means placing Individual atoms to form products of great complexity at extreme small scale. Nano car of Tata is glamorous illustration of the Nano science cum Nano technology. It makes possible to control matter at most fundamental/basic level, the atomic and molecular structures that are foundation of all living system and human beings made products, by

organising individual atoms and molecules into particular configurations the molecular machine creates work of coral – reef (marine rocks / walls) to human brain.<sup>1</sup>

“Nano technology exploits the idiosyncratic properties of matter at the Nano scale across several different fields of modern engineering’s pursuits”. Consequently, the basic Nano technology patenting may have implication for semiconductor design, bio technology, material sciences tele communications and textiles.<sup>2</sup> (it refers broadly to using material and structure with Nano scale dimension usually ranging from 1 to 100 nanometres). Many Nano technology patents take benefits of the inimitable physical properties of Nano scale materials to put things fundamentally different uses. Buck - minister Fullinwider<sup>3</sup> Observed as naturally accruing products of nature in unpatentable but hundreds of patents on implementation of the molecule level have issued. Nano patents are held in unexpectedly large proportion universities.<sup>4</sup>

### **1.2 Rational:**

Nano technology is attempting to get started at a time (after 60 years of independence of India), when knowledge flows less liberally than it did during the software revolution/rebution in the world than in India. Now a days Nano technology has become more a science than technology and basic research is supposed to exempt from this patents system, because knowledge and innovation/discoveries until lately have been un – patentable, opens to all and subjected to the scientific scrutiny and hot – eager/curious debates. The absence of patents restraints allowing scientists to work for the pure satisfaction of discovery.

In contrast the patent system has potential to corrupt not only the process of basic research but entire academic system.<sup>5</sup>

### **1.3 Scope:**

In other words, Nano technology is not one genus or one of the species of technology but essentially interdisciplinary, poor examination of Nano technology patents would cause either overtly, broad patents that would unjustly block subsequent innovation or unreasonably/unjustly narrow patents that would fail generate income/revenue for the patent owners or holders. currently poor research on PRIOR -ART that might lemmatize the application, scope or its very approval, lack of knowledge for example/instance with the areas such as software and business methods have too much lowered the threshold of Nano technology obvious to alarming levels consequently in granting of patents of simple ideas such as one click method of purchasing online on amazon .com. Besides this many patents at this moment enclose too natural phenomenon that should be in the domain of pure science. More over many corporate bodies were patenting basic elements of genetic code without any idea of what they might be used for and thus causing many problems in science and innovation. In Nano technology people started patenting the basic ideas at the outset in contrast with hardware, software, the internet, bio technology, even the basic building blocks of all fields were unpatented.

Patent law of course does prohibit the patenting of “abstract ideas” preventing early stage patenting of broad concept.<sup>6</sup> Basic software invention were not patented because during 1960 to 1980s the court took the position that software not patentable at all.<sup>7</sup>

In USA IPRS in biological inventions the moments for more strong property rights began with **Diamond vs chakrabarti**<sup>8</sup> the only exception was statutory (The Plant Patent Act 1930 allowed patenting of plants that would be reproduced as sexually while the US patent office policy was to refuse application for patents on living organism.

## **2.0 Ingredients of patentable Nano technology involving discoveries or invention/innovation.**

- a) The patentable – matter/subject matter of the patents ought to have commercial-utility (money/revenue) earnings by monopoly.
- b) The discovery /or invention must have originality that is it should be novelty (De-novo) invention.
- c) It ought to be non-obvious in the light of prior - arts.
- d) It should be adequately fit and capable to describe to enabling one “skilled in the art” to make and use the invention.

## **3.0 patentability of software (US vs EPC).**

**3. (i)** It can be argued that patents block the entry of new - comers into the software field. It has to be examined that marketed software packages are clones of flourishing product with the insignificant originality. Could be cloning a patented/or product/or a patent - discovery/or invention? Cloning as a successful product could be patentable if there is an invention making practical usage of new product more efficient and employing Nano technology but innovated & must devise an original solution that does not infringe on another product by only just copying the whole patented product with reproduction. when the business was established patents protected research and development investment again apportion by free riders and enables innovation with competition.

**3.(ii)** Euro – patent convention (EPC) - Euro – patent convention EPC and its countries member’s legislation excluded computer software programme as such software invention involved the use of computers, computer network or other available programme devices. So current practices denied patenting. It also excludes business method from legal/legitimate patenting.

## **4.0 Ideas of Patenting and Development of Nano Technology:**

Nano Technology Patent law is technology neutral but application varies by field of technology. The patent law is inextricably tangled with the process and development of the technological development and there are ongoing efforts to adopt legal infrastructure to an ever-

changing environment. That means the precedent establishing in bio-technology patent has to be further adopted to be applicable to Nano technology patent taking under consideration of its unique character's functions and implementation.

#### **4.(i) Nano patent - two criterion Groups the pre – requisite need for legitimacy.**

(1) Those criteria that apply to inventor. (2) Those that concerned the sufficiency of the patent application itself in the patent documents written. Legal requirement must be full filled i.e. describe invention in particular.

In **Graham vs John. Deere co. of Kansas**<sup>9</sup> court had held an enquiry into obviousness of invention is a pre - request to patentability, while the court, also in *Re Deuel* held that isolated and purified DNA molecules excised from genes are patentable, if they are useful, novel, non-obvious adequately disclosed.<sup>10</sup>

“Patent law applies uniformly to all technologies but distinctively” - said Dan L Burke and Mark A Lamely<sup>11</sup>. “In theory we have then a uniform patent system that provides TECHNOLOGY NEUTRAL protection to all kinds of innovations”.

It should be taken into account that Nano technology can involve chemistry, biology, physics, cyber science, pharmaceuticals, material sciences and diverse field of engineering and other disciplines. In **Fujikowa vs wattanansin**.<sup>12</sup> Federal court discussed the role of utility in Pharmaceutical ARTs reasoning that specific type of testing is adequate to (utility) ascertain pharmaceutical activity in minds of experts/skilled in the art.

**4.(ii) Patenting Ideas is a Technology** - At present Nano technology focuses on the development of electronic devices for near single electron, on the Nanometre scale (Nano – electron) or in the building of nanometre scale mechanical devices for molecular - scale chemistry (Nano - machines) how can law respond to strong and broad Nano technology patents. The India can and must focus more on preventing deliberately destructive uses /misuses / abuses of Nano technology rather than preventing accidents. The radical transformation made by genetic changes have launched as in genome Bio – technology and assist the reproduction in termed.

**4.(iii) The human genome** - is comprised of all DEOXYRIBO NUCLEIC ACID (DNA) a person possesses and DNA is composed of order combination of a (a) demine (b) guanine (c) Thymine and (d) Cytosine.<sup>13</sup> The Human - Genome includes 3billons nucleotide bases. Although however 99.99% humans are genetically the same and variation of 0.1% amounts to 3-4 million.<sup>13. (a)</sup> DNA is made up on intermixed coding and non-coding sequences – exons and introns genes can be patented so far as such patents are based on information derived from complementary DNA (DNA) sequence. In nature DNA does not subsist but it is produce through human technological intervention that create subsists of DNA made up only exons with intermixed introns erased strands.<sup>13.(b)</sup>

**4.(iv) Human Cloning and Patentability** - Uncertainty about how an assembler will work and whether it will work like a practical utility problem for Nano technology patent also additionally dendrimer based technology like all Nano technology is still in an upstream research in India, there is not much prior art and so per se (fragment)/scattered/ (not dense)/or only sporadic and non-sufficient. Prior art makes it complicated to know contours of potentially wide ranging disclaimer patent having difficulties to determine the scope of patent. Hence A BROAD – PATENT may affect at many subsequent discoveries in CANCER – RESEARCH, the medical research and neighbouring areas.<sup>14</sup>

**5.0 Human cloning prohibition Act 2002 US** - The patentability of human cloning and the products of human cloning as well in USA is foggy and absence of statute or judicial restriction against issuing patents claiming human clones (Human cloning Prohibition Act 2002)<sup>15</sup>. Accordingly, to **Donald J Quigg (Animal Legal Defence Fund) vs Quigg**<sup>15.(a)</sup> and also Transgenic Animal Patent Reform Act H. R 100<sup>th</sup> congress (1988)<sup>15.(b)</sup>. the grant of an exclusive property right in human being, but limited, is prohibited by constitution. The subject matter of patent includes anything under the sun that is made by man *Diamond Vs Chakrabarti*<sup>7</sup> which means that not only non-human animal is patentable subject matter but human clone too is patentable as manmade invention. The US supreme court reiterated that extreme extent that the relevant distinction for purpose under constitution (Art 101) is not between living and in inanimate things but between products of nature whether living or not. In **Brenner vs Manson**<sup>16</sup>. stated that “Invention lacks suitability if the invention is injurious to the morals, health, or good order of society or frivolous or insignificant”. “Human cloning does not cause immediate physical harm and it is not invention to poison people or to promote debauchery or to facilities private assassination which is not patentable invention” (In Re Nelson)<sup>16.(a)</sup>

## **6.0 Legitimacy of patents**

Inventions cannot be ruled un-patentable for the lack of utility, simply due to the lack that they have ability to deceive some members of society (public) and the patent and trade mark office or the judiciary courts do not serve as arbitrators of deceptive trade practices. Furthermore, a patent does not give ownership to the protect claimed therein it only allows patent owner rather the right to exclude others from product too using offering to sell, selling, importing in to the US, the product of that patent and there is no ownership right or grant of slavery so as to have violation of (xiii) Constitutional Amendment in granting a patent claiming human cloning. Hence there is need to remove explicitly human cloning from patentable subject matter explicitly but not inventions concerning the discoveries made during the development of cloning industry, such as pharmaceuticals which control cell differentiation. European patent convention Art 54 (4) relates to patent for medical diagnosis and therapy.

**6.(i) To sum-up** - the researcher has to state in respect to India renaissance in Nano technology Jurisprudence of patents a Nano technology innovation and there patenting is a war cry for strengthening Indian economy with jet speed in times of research and development in various fields to combat in the world market under the domination of WTO/TRIPS regime and with the under developed country itself to have the tiger leaps leaving for behind US, UK, China, Russia in the race of powers.

All inventions work are the cause of speedy and sharpened awareness of global market and consumer instant satisfaction combating Chinese goods, japan metro train, Iron - Atomic and petroleum products and electronic of Singapore. Hence all invention work as achieved before they can be patented – (an inventions need with both best, not the only way to accomplish success in competition surroundings with also unfair global products as the result and it need only to be use full to some extent and in certain commercial and individual application. So applicants before applying for that has to provide rebuttal evidence sufficient to convince/satisfy such a person of the inventions asserted utility.<sup>17</sup>

In Brand and in **CMFT Inc vs Yielup International Corporation**<sup>18</sup> - The court held that Inoperability standard for utility applies primarily to claims with impossible limitation. In **Process Central Corporation vs Hyde reclaim coopration**<sup>19</sup> - The court held that when an impossible limitation e.g. / (such as) a non-sensible method of operation is clearly embodied within claim, the claimed invention must be invalid. Thus inoperatibility standard prevent an applicant from patenting an impossible invention<sup>20</sup>. A Nano technology invention has to be possible and operatable but Nano technology is speedily changing and Nano technology occupied old one's working too. Actually there are not enough experiments to the specific proves.

Nano technology thus lack inventions/innovation working sufficient rebuttal evidence to concince/satisfy that invention is useful and have knowledge about the process Art in order to explain the obviousness and non-obviousness & Practice utility require the invention to real have world benefit.

Practical utility has law standard that is rarely litigated chiefly for mechanical or electro inventions but it is real issue for chemistry and Bio technology medicine pharmaceutical invention because usefulness of such invention is often uncertain that means the Nano technology invention will ought to be prone the practical utility which is not applicable for Nano technology patents referred to ideas.

## **7.0 The story of India – version 1<sup>st</sup>**

Nano technology invention patent protection is an emerging specie of technology. For Nanotechnology it can well be proclaimed particularly about India that it is worlds 'third' economy after U.S. and China. Within last 30/29 years of (xxi) century Nanotechnology has exploited and India played an unbeatable role in the success of global – Nano - technology. It is newly emerging technological challenges and present day technological challenges will be tomorrow's patents with great prospectus, as its involvement in Bio -diagnostic could grow to millions of dollars per year, although commercial Nanotechnology is still in the nascent stage/child - teething trouble era. Nano technology is very vital and immunities provider that is likely to affect almost every aspect of Indian law. Now it is not a country of snake charmers and illiterates or frog of the well, now a day the country has atomic power to fight the wars. It can produce and add things on an atomic and molecular - scales viz computers we use, our luxuries and goods surety cloths and medicine.

The increase in competing globalisation has resulted in Foreign Directs Investment (FDI) which in turn have to led to increase/enhance in the filling of patent application in the field of Nano technology of patent Trade officials access the norms. The countries like UK, japan, Germany, China, France, Singapore, Russia, Israel have invested heavily in for enticing version research projects in the field of Nano technology.

In US government funding the increase in Nano technology research creativity is more prominent and (percentage) of investment of more in the area pertaining to Nano - electronics, industrial products and life – science. Among them US is leader (i) in terms of creation and development of Nano technology companies / corporation relaying on Nano technology.

(ii) most significantly competing in this patenting actually of Nano technology invention estimate dollars 1.3 billion have been dedicated to Nano technology project between 2005 to 2014 According to National Science Foundation of US<sup>21</sup> the Nano technology market would cross one billion dollars billion marks by the end of 2017.

The Problems patent thinkers and tragedy of anti-consumers are more prominent in Nano technology inventions on account of inter - disciplinary many characters' lake of patent examiners of proper scientific knowledge and patent search data passes with regard to Nano technology our scientist on facing the problem by granting patents to Nano technology invention. The patent areas whose Nano technology invention have positive effect/impact including. Pollution - eradication monitoring and control environment degradation medicines and health care pharmaceutical and nourishing food grain security, to fight hunger, electrical energy/solar energy and Nano - electron. The areas where Nano technology of Couse has a negative effect (impact)are Nano divide, biosphere, gray - god and toxicity

and Nano weapons. The steady increase in protection of Nano technology products has also created uncertainty and risk so patents overlaps and patent land gaps.

**Critical issue** – Enforcement of rights and invidious/hateful patent are worth tackling issues that are with the grant of Nano technology invention patents as it paves the way of patent litigation. A strong legal frame work /or mechanism for the prevention of Nano technology products can be established through coordination and amendment and strengthening of the existing legislation / or and by enactment of new laws would be more beneficial and advantageous because the provision, of existing laws do not suit Nano technology invention and the presentation of sustainable plan by manufacture at the time of patent application would improvise the system. International law has much more satisfaction & foresight capabilities in research and public/private participation are motivational factor that strengthen the growth of technology.

### **8.0 Version 2<sup>nd</sup> – India’s working fails due to lack of and shortage of expert’s experiments**

In India after the patent Amendment Act 2005, not only technical contribution but also economics significance or both (sec 2 (j) (a), so far as relates to innovative steps) was included. So also mere discovery cannot be patented but it leads to industrial application (utility) then it could be patented. A theory / principal par - se can’t be patented but helpful it is to produce a new process; it can be patented **Lallu Bhai Chaku Bhai Jari Wale vs Chimanlal Chunnilal & Co.**<sup>22</sup> treatment of all-round dominance process.

Emergence of project TERI Habitual Centre New Delhi – one of the key recommendation on workshop<sup>23</sup>. Events of agenda – IPRS - Nano (policy march 2010) issue trends and challenges governance and Nano Tech. Dev. Rev 28, Jan 2016.

Since 1997, only 64 patents have been granted by Indian patent office and of which:

- (i). 24 of its are owned by industries.
- (ii). 28 of its are owned by academic and scientific industries – 06{CSIR &IIT).
- (iii). Rest by individuals 07.

In **Apple Inc. vs Samsung Electronics Co. Ltd**<sup>24</sup> More recently patent infringement in six patents, The US court awarded \$ 1.05 billion in damages more than 40% of \$ 450,514,650 and reduced the award and slashed.

Patent by the criteria in India – under patent Act 2005 Sec 3 (d) – Discovery of a new property to a known substance. The mere discovery of new form of known substance that does not result in the enhancement of known (substance) efficiency of or mere use and discovery of any new property, or



new use of known substance, or measure of known – process, machine, or apparatus, (unless such known – process, result in new product or employs at least one new reactant) is not patentable subject mark cancer drug case [Novartis aa vs UOI].<sup>24.(a)</sup>

TRIPRs (The Trade Related Aspects of Intellectual Property Rights Agreement 1994) – Article 27 – (1), (2) & (3) – Question of law – Does the product (as claimed by application of patent) qualify as a new product which comes by through invention that has for best feature involves technical advances as after the existing knowledge and that makes the invention not obvious to a person skilled in the art?

How apex court responded? “the drug glivec directly emanates from an earlier Zimmermann patent and comes to the market for commercialisation sale. Held – Imatib Meyslate late can’t be said to be a new product having been come through an invention, which has a feature / characteristic that involve technical advance over existing knowledge and that would make the invention not obvious to a skilled person in art. The in action of Novarts in not obtaining patent for Imatib Meyslate in non-crystalline form from which it had obtained patent for several different form of Imatib was interpreted by the court that Novarts had always maintained that Imatib Meyslate totally a part of the Zimmermann patent and does not call for any separate patent”.

The argument of invention was not accepted by the supreme court on the reasoning that Imatib Meyslate is a known substance in the Zimmermann patents and its pharmaceutical properties are also known in the Zimmermann patent and in the cancer research journal expressed.

---mere changes of its form of properties inherent in the form would not classify as ENHANCEMENT OF EFFICACY of a known substance. increased bio - availability alone may not necessary leads to an enhancement of efficacy of their feature nature.

Efficacy means the ability to produce an intended or desire result. The discovery allotropes will only be patentable if they increase efficacy over the known allotropes.

The judge made law in Nano technology are almost very less in existence however.

**9.0 Conclusion and Suggestion** - Need of Utility patents in India is most urgent demand today.

Last but not least there is heart breaking absence of utility patents in India, despite many countries have utility patents. These are short - term patent granted for investment having same utility (Nano technology) in terms of use and threshold innovating / inventive step is small (6 to 10 years). Germany has had since 1891 developed to which encourage inventors to create and invent further. Paris convention 1883 PTC 1970 & Strasbourg agreement 1971 on patent classification 1971 and amended in 1979 has divide technology in 8 sections or 70000 divisions and the classification is

indispensable for two retrieval of patent document in search or Prior – Art. That is needed for patenting issuing further.<sup>25</sup>

Germany Utility Model law sec. (1) amended in 2013 and provide for even prosecuting utility mode that is cheaper then challenges government (judicial proclaim) in India.<sup>26</sup>

This essay would be incomplete and breathless unless the following lines of narration are not highlighted.

On 12<sup>th</sup> Oct,2017 in the auspicious of DAVV Indore three days long International Conference on Nano Technology and Nano – Science<sup>27</sup> was held for the first time in Indore (M.P.). The special guest Dr. D.K Awasthi Chairperson India ION Beam Society, inaugurated and expressed forcefully and with enthusiasm that for the social purpose and health for treatment of the disease of Cancer, use of ION Beam it has great importance – in cancer – cell. Nano film, fuel cell formation etc. also he further added transfer of Technology to industry and education the operation is must necessary Dr. Anirathi Pandiyaan Kallapuram, the Chairperson of Indira Gandhi Atomic centre said that, “for the Atomic energy mechanical device he role of ION Beam is very great in enhancing the use of thorium base fuel” & detailed his fineeings on this issue in his research paper.

Whereas Dr. Mukesh Ranjan and Professor Tapovrat Som highlighted their view on the structure of none for manufacturing requiring the use of ION Beans and emphasised and asserted that use of Nano – structure could be produced for social as well as health purpose. Also their use can be made for finding out speed of light and cancer cell (nucleus) and also for measuring the efficiency of skill of cell of cancer for increase. Dr. P.S. Sahu put his idea funan suran (Channel Device which could be for energy transformation (conversion) Dr. Yogat of South Korea demonstrated von device that can be used for the purpose of cure & treatment of cancer.

For all this development and growth, the industry and technology must cooperative venture under rule of law of the country India, their great power of the globe.

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