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To Study the Role of Intellectual Property Rights In Nanotechnology- An Indian Perspective

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ABSTRACT

The emergent subject of nanotechnology (NT) is currently very lively global with appreciate to intellectual belongings rights (IPR), in particular patents, with each evolved and growing nations joining in the nano-patents race. With the emergence of any new era, nanotechnology creates possibilities in addition to challenges in adapting the patent regime to its particular context. just like computer systems, nanotechnology is both an permitting era and a era sector in its own proper. Nanotechnology is prolific within the re-search and improvement efforts of almost every monetary quarter, from aerospace to medicinal drug to energy. Many business merchandise now contain nanomaterials or nanotechnology ideas. for example, the excessive surface vicinity of nanoparticles has been useful in enhancing healthcare textiles , increasing the recovery power. today, the race is on to win the exclusive monopoly patents in this nano-scale materials, devices and processes. the united states countrywide technological know-how basis predicts that the immensely extensive strength and scope of nano-scale technology will revolutionize manufacturing throughout all industry sectors – shooting a \$1 trillion marketplace within six or seven years. This paper seeks to examine the challenges which patenting of nanotech entails for the patent regimes of India and the way these may be addressed definitely.

Key-word : Nanotechnology, healthcare textiles, intellectual property rights (IPR), Microbial biotechnology, Technical Textiles, patenting, copyright, and trademarks.

INTRODUCTION

According to Dr Richard Errett Smalley, (1996 Nobel laureate) - When you manage the atoms, you manage on the subject of everything.'

Nanotechnology deals with manipulation of matter at the dimensions of atoms and molecules, in these technology , length is measured in billionths of meters (one nanometer = one-billionth of a meter). Nanotechnology is not a unmarried technology – but a variety of technology converging at the nano-scale – together with biotechnology, genomics, neurosciences, robotics and facts technology. Nanotechnology is entitled as ‘the transformational era of the twenty first century

(David R., 2005).consistent with the professionals nanotechnology will revolutionize manufacturing throughout almost each sectors and in the end impact the manufacturing of virtually every human-made item (David R., 2005).

Nano-scale engineering offers new possibilities for sweeping monopoly control over each dwelling and non-living count number. intellectual belongings (IP) will play a first-rate role in determining who will capture nanotech's trillion dollar market, who will benefit access to nano-scale technology, and what fee they may pay. in keeping with Stanford university law professor, Mark Lemley, patents will forged a bigger shadow over nanotech than they have got over another current technology at a comparable level of development.(Lemley M A, 2005)

Manipulation and ownership of nanotechnology is a essential problem for all governments because a unmarried nano-scale innovation (substances, devices and methods) can be relevant for broadly divergent packages throughout a couple of enterprise sectors. in step with the Wall road journal the groups that keep pioneering patents should doubtlessly placed up tolls on entire industries (Antonio R , 2004).The contemporary nanotech patent rush is harking back to the early days of biotechnology – 'it's far like biotech on steroids' in the phrases of one patent legal professional.

Crucial function of Patents to the Nanotechnology

Nanotechnology being strongly science-based totally to begin with stepped forward thru conceptualization followed via validation of principles. In a few cases, standards have emerged from thinking and explaining located houses validated with the aid of current nano materials and in numerous instances tailoring nano substances for specific quit effects or incorporating nano materials as subsystems in integrated structures to produce beneficial give up merchandise(Mueller JM. 2008). diverse aspects of innovations in the field of nanotechnology are included using equipment of intellectual property Rights including:

- Patents,
- Commercial layout registrations,
- Copyright, and
- Logos

Patents in nanotechnology are vitally crucial for it to realize its genuine capability and circulate beyond the hype. according to an SRI Consulting enterprise Intelligence observe, hype in nanotechnology (as measured by using the number of news articles) outpaced patents offered for the beyond few years, mainly 1997 to 2002 (Regalado A, 2004). In truth, given the amount of studies investment from government, company, and private assets flowing into nanotechnology studies, the trend of patenting hobby synchronous pace (Bawa R, et.al, 2005) (Gupta V ok , 2009)

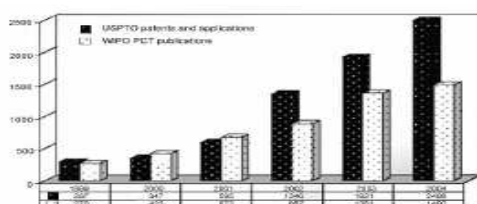


Fig.1 Nanotechnology patent Trends (Source ETC ,Canada)

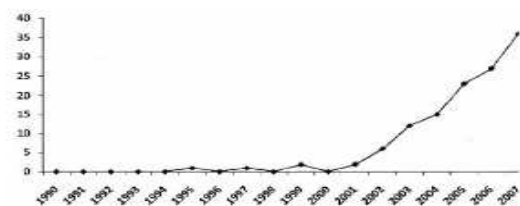


Fig. 2 –Indian patenting activity in nanotechnology for the period 1990-2007 (Gupta V K , 2009)

Indian scenario

In Indian Nanotech R&D state of affairs, there's no doubt that capability of Nanotechnology is monstrous. There are greater than 35 industries and 50 institutes engaged in nanotech research and development, specializing in chip design, nanomedicine, nonmaterial, use of nano materials for drug delivery, diagnostic kits, advanced water filters and sensors, and for lowering pollutants from motors. Many well placed Indian scientists believe that India has many nanotech products but isn't translating into marketplace products because of vulnerable links among Indian scientific institutes and industry, and the home industry's reluctance to manufacture large portions of nanomaterials validated to have industrial software (Roca M S.et.al,2001)

In India out of the total 167 patents, 64 patents (39% of the entire patents) are owned via the authorities establishments, 45 patents (27% of the overall) by using companies inside the industry, and 10 patents (6% of the full) via academic establishments. There are 37 patents (22% of the whole) that are owned through character inventors. The ultimate 5% of the patents are joint patents in collaboration among authorities institutions or companies from enterprise. The main participants from the government region consist of laboratories of the Council of scientific and business studies (CSIR), protection studies and development agency (DRDO) and branch of Atomic electricity. The firms, like Ranbaxy Laboratories confined (Indian enterprise till 2007), Stempeutics research private restricted, Panacea Biotech confined, and Arrow covered products limited were the main proprietors of patents. the instructional establishments that have taken patents encompass the Indian Institute of science, Indian Institutes of technology, and Jawaharlal Nehru college (Gupta V k , 2009).

In India, most of the top 10 institutions were research institutions and labs. Indian Institutes of Technology (IIT) were the most productive institution, with about twice as many publications as the second productive institution, the Indian Institute of Science, Banguluru (Table 1).The top institutions had a rapid increase in paper publications from 2000 to 2007. The Indian Association for the Cultivation of Science showed the largest increase, publishing 149 papers in 2007 as compared with its 17 publications in 2000 (Bhattacharya S , 2002)

Table 1- Top 10 institutions in Nanotechnology Paper publicatios in India (1997-2007)

Rank	Institutions in India	2000	2007	1976– 2007
1	Indian Institute of Technology	62	464	1,845
2	Indian Institute of Science	29	169	828
3	Natl Chem Laboratory	26	79	603
4	Indian Assoc Cultivat Sci	17	149	529
5	Bhabha Atom Research Center	11	81	409
6	Jawaharlal Nehru Ctr Adv Sci Res	20	65	303
7	University Delhi	5	70	229
8	National Physics Laboratory	6	65	222
9	Tata Inst Fundamental Res	6	25	189
10	Indian Inst Chem Technol	5	64	184

Table 2- Top 10 assignees in nanotechnology patent publication in India (1976–2007)

Rank	Assignees in India	2000	2007	1976–2007
1	CSIR	1	1	64
2	Dabur Research Foundation	0	1	10
3	Dr. Reddy's Research Foundation	2	0	9
4	Dr. Reddy's Laboratories Ltd.	0	1	6
5	Panacea Biotec Limited	0	0	2
6	Department of Biotechnology, Govt. of India	0	0	1
7	Department of Science & Technology	0	0	1
8	Galaxy Surfactants Limited	0	0	1
9	Indian Explosives Limited	0	0	1
10	University of Delhi, Department of Chemistry	0	0	1

Table 2 report the most productive assignees in patent. The assignees in India were universities, private companies, or national research centers (Table 2). Among them, the Council of Scientific and Industrial Research (CSIR), a national research center, was the most productive assignee. It has nearly seven times as many patents as secondary institutions (Xuan Liu,et.al, 2009).

Complications in Patenting Nanotech inventions

As with the emergence of any new generation, nanotechnology creates problems, possibilities and issues in adapting the highbrow assets rights (IPR) regime to its particular context. this is to a big quantity magnified in developing and least evolved nations, which regardless of their state of technological development, are obliged to confer intellectual belongings (IP) rights inside the new generation.(Siddharth k.,2006).there may be some amount of consensus that patenting nanotechnology innovations poses greater troubles than other technology, and will supply rise to some of complex situations. some of these are:

1. Multi-Disciplinary and Multi-enterprise packages
2. Vast Claims and Patents on simple inventions
3. Extended Patenting of Upstream research and position of Universities
4. Difficulties in identifying NT Patents
5. Difficulties in gratifying the Patentability standards
6. Indian Patent Act phase three(d) renders nanotech invention nonpatentable at the grounds of Novelty.
7. Indian Patent Act phase three(b) renders nanobiotech innovations non-patentable on ethical grounds.

Suggestions-Techniques for lowering the barriers to innovation & commercialization of nanotechnology

The need of the hour is to first off formulate a plan for increasing the studies and development in the area of nanotechnology, secondly to provide for investment and unique incentives for studies on this subject(Sampat B. 2003). one of the methods or possible option to the prevailing trouble of patenting Nanotechnology can be addressed by way of bringing amendments in the Indian Patent Act that might not be exhaustively directed to nanotechnology however they have to have some mechanism to apprehend the field of nanotechnology and formulate a complete regulatory plan that deals with Nanotechnology imparting for research, viable risks and a framework for regulating the same(Schummer J. 2007).

Sweeping changes have to be brought, within the Indian Patent Regime, to upward thrust to the event, and tackle more modern technology easily. a few of these suggestive measures can be put to apply for the identical:

Patent programs are to be examined by means of a crew of examiners, in place of a unmarried examiner, as multiple inspections would prove higher in expertise the claims (Soo k. 2008).

Introduction of a database of earlier art, corresponding to the conventional information Database.

R & D - Sustained global elegance R&D via funding multidisciplinary studies and improvement is the prerequisite. Infrastructure availability is essential to help companies, specially small businesses that cannot have the funds for the cost of nanotechnology instrumentation, gadget and facilities. There need to be cooperation among university and industry. This will suffice the want of simple technology improvements, steeply-priced laboratories, and for exceedingly skilled employees (Sharma D. and Noopur R. 2008).

One single prepared and centralized command centre ought to be installed, for the sake of nanotechnology patenting (Prakash G. 2000). This would make sure uniformity in patent claim interpretation. training to personnel on a periodical basis might help meet the task of lack of information on the situation. creating expanded earlier artwork databases might be prudent mechanisms to assist ascertain the factors of novelty and ingenious step.

The patent offices have to be open to accepting wider claims because the case shall show, which will accommodate technology of their nascent ranges (Soo ki. 2008).

CONCLUSION

There may be no denying the truth that a transparent and predictable regulatory framework for IPRs subsidized by means of higher IPR enforcement might gain India's enterprise surroundings and additionally boost public hobby. that looks to be the aim at the back of the Indian government's decision to set up a suppose Tank comprising eminent professionals to recommend a complete IPR coverage based on considerable consultations with stakeholders, each home and overseas. indeed, the draft IPR coverage published for public remarks by using this professional frame recognizes the extensive role of IPRs as a driver of innovation, exchange and economic growth.

At present Indian Patents Act, has no provision that even incidentally touches the sector of nanotechnology. There have additionally been no pointers or policies framed with respect to regulating this technology though change-related elements of TRIPS agreement which especially provides that highbrow protection have to be prolonged to all fields of technological know-how so that it encourages extra studies and innovations.

Nanoparticles because of their small length have proved to be greater efficient, goal precise, water soluble and solid gear in drug delivery in comparison to the traditional routes of drug administration. For many years pharmaceutical sciences have been the use of nanoparticles to lessen toxicity and facet results of medicine. This technology increases problems which can be in confrontation with intellectual property rights protection and non-commercial legal guidelines (which includes the environmental laws). In the absence of consonant patent law provisions, nanotechnology will come across demanding situations with appreciate to the criteria of novelty, imaginative step, being capable of industrial software and eligibility of situation matter under segment three of Indian Patents Act 1970.

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