2024:MHC:1802

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(T)CMA(PT)/19/2023

IN THE HIGH COURT OF JUDICATURE AT MADRAS

Judgment reserved on	08.12.2023
Judgment pronounced on	15.04.2024

CORAM

The Hon'ble Mr. Justice **SENTHILKUMAR RAMAMOORTHY**

(T) CMA (PT) No.19 of 2023
(OA/1/2021/PT/CHN)

Galatea Ltd.
Dalton Industrial Park
Dalton, Israel - 1381000 ...Appellant

v.

1. The Controller of Patents,
   Patent Office,
   Intellectual Property Building,
   G.S.T. Road, Guindy,
   Chennai – 600032.

2. Mr.Patel Viral Harshadbhai,
   39, Sahajanand Crystal Society,
   Opp.Divine International School,
   NR. Sukan Cross Road,
   Nikol-Naroda Road,
   New Nikol – 382350.

3. Mr. Tapan Shah,
   E-13, UPSIDC-SITE-IV,

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Kasna Road,
Greater Noida – 201308.

4. Mr. Goyani Atulkumar Bharatbhai,
Flat-B/203, Vastukala Apartment,
Singanpore Char Rasta, Ved Road,
Surat City, Surat – 395004, Gujarat.

5. Mr. Rajeshbhai Jivrajbhai Akoliya,
Flat-A/404, Solitaire Hills,
Near RP Vasanti International School,
Near Avni Homes, Nava Naroda,
Ahmedabad – 382350, Gujarat.

6. M/s.Sahajanand Technologies Pvt. Ltd
Sahajanand Estate, Wakhariawadi,
Dabholi Char Rasta, Ved Road,
Surat – 395004, Gujarat.

7. Ms.Maitreyee Saha,
B-54, Green City, Sector 26,
Gandhinagar – 382028,
Gujarat.

8. Mr. Gaurang Babubhai Gabani,
B 903, Angan Residence,
Ved Gurukul Roas, Katargam,
Surat – 395004, Gujarat.

9. Mr. Mehulkumar Khodabhai Dungrani,
104/127/4, Madhav Darshan Society,
Dabholi Char Rasta, Ved Road,
Surat – 395004, Gujarat.

10. Mr. Valmik Mundkar,

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B3-101, Sector 30 and 41,
Gurgaon – 122001, Haryana. ...Respondents

PRAYER: This Civil Miscellaneous Appeal is filed under Section 117-A of the Patents Act, 1970, praying to pass an order granting a direction setting aside the impugned order and granting a patent on the application and a direction that the Respondent No.1 shall allow the application to proceed to grant on an expedited basis.

For Appellant : Mr.Neeraj Malhotra, Sr.counsel
Mr.Sandeep Grover,
Ms.Vara Gaur,
Mr. Abhishek Arora,
Ms.Dhairya Arora,
Mr.Karthik Sundaram,
Ms.Chandana Sri Hari
for M/s.Ortis Law Offices

For Respondent No.1 : Mr.S.Janarthanam, SPC

For Respondent No.5 : Mr.P.S.Raman, Senior Counsel,
for Mr.Ramesh Ganapathy

For Respondent No.6 : Mr.R.Parthasarathy,
for Mr.Anil Dutt,
Mr.S.Anand

For Respondent No.9 : Mr.Adarsh Ramanujan,

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for M/s.Khurana & Khurana.

JUDGMENT

Background

The appellant assails an order dated 13.10.2020 by which Patent Application No.876/CHENP/2008 was rejected by the Indian Patent Office. The said application was the national phase application derived from PCT Application No. IB-2006/052884. The claimed invention is titled "A method for evaluation of a gemstone". Upon such application being presented before the Indian Patent Office on 21.02.2008, the First Examination Report (FER) was issued by the patent office on 09.08.2014. The appellant responded to the FER on 05.02.2015 and 01.04.2015. A hearing notice was issued on 05.04.2015.

2. Meanwhile, the first notice of pre-grant opposition was filed by the second respondent on 02.12.2013. The second respondent cited prior art documents D1, D3 and D11, which were referred to in the impugned order, and such pre-grant opposition was responded to by

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the appellant on 04.11.2013. A second notice of pre-grant opposition was filed by the third respondent on 05.04.2017 and supplemented on 18.09.2017. The third respondent cited prior art documents D2, D3, D5, D6, D7 and D9, which were referred to in the impugned order. This pre-grant opposition was responded to by the appellant on 10.11.2017. A third notice of pre-grant opposition was filed by the fourth respondent on 26.04.2018. The fourth respondent cited prior art documents D2, D3, D10 and D12, which were referred to in the impugned order, and such pre-grant opposition was responded to by the appellant on 29.06.2018. A fourth notice of pre-grant opposition was filed by the fifth respondent on 27.04.2018. The fifth respondent cited prior art documents D1-D3 and D13, which were referred to in the impugned order, and such pre-grant opposition was responded to by the appellant on 29.06.2018.

3. A fifth notice of pre-grant opposition was filed by the fifth respondent on 04.05.2018. The fifth respondent cited prior art

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documents D1, D2, D4 and D14, which were referred to in the impugned order, and such pre-grant opposition was responded to by the appellant on 29.06.2018. A sixth notice of pre-grant opposition was filed by the seventh respondent on 12.06.2018. The seventh respondent cited prior art documents D1 and D3, which were referred to in the impugned order, and such pre-grant opposition was responded to by the appellant on 07.07.2018. A seventh notice of pre-grant opposition was filed by the eight respondent on 11.02.2019. The eighth respondent cited prior art documents D2 and D15, which were referred to in the impugned order, and such pre-grant opposition was responded to by the appellant on 14.02.2019. A eighth notice of pre-grant opposition was filed by the ninth respondent on 02.11.2019. The ninth respondent cited prior art documents D1-D9, which were referred to in the impugned order, and such pre-grant opposition was responded to by the appellant on 05.11.2019. The ninth and last pre-grant opposition was filed by the tenth respondent on 10.01.2020.

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4. These pre-grant oppositions were made *inter alia* on the grounds that the claimed invention lacks novelty in view of anticipation by prior art or is vitiated by insufficient disclosure or lack of clarity or is patent ineligible or lacks an inventive step in view of specific prior art references made by each pre-grant opponent. Out of the prior art cited by each pre-grant opponent, only prior art documents referred to in the impugned order are mentioned above. In response to objections raised in the examination hearing, the appellant amended its claims by submitting a set of 11 claims on 10.10.2019 consisting of 1 independent and 10 dependent claims. Eventually, by the impugned order, the Controller rejected the application for grant of patent by concluding that the claimed invention lacks an inventive step and that there is insufficient disclosure. The present appeal arises in the said facts and circumstances.

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Counsel and their contentions

5. Oral arguments on behalf of the appellant were addressed both by Mr.Neeraj Malhotra, learned senior counsel, and by Mr.Sandeep Grover, learned counsel, assisted by Ms.Vara Gaur and Mr.Karthick Sundaram; on behalf of the first respondent by Mr.M.Karthikeyan, learned SPC; on behalf of the fifth respondent by Mr.P.S.Raman, learned senior counsel, instructed by Mr.Ramesh Ganapathy, learned counsel; on behalf of the sixth respondent by Mr.R.Parthasarathy, learned counsel, instructed by Mr.Anil Dutt, learned counsel; and by Mr.Adarsh Ramanujam, learned counsel, instructed by M/s.Khurana and Khurana for the ninth respondent. All the other respondents did not contest the appeal in spite of notices being served on them. The appellant, fifth and ninth respondents also filed written submissions.

6. Learned senior counsel for the appellant opened his

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submissions by pointing out that the claimed invention relates to a method of evaluation of gemstones for purposes of identifying inclusions therein. He next submitted that the value of ornamental gem stones, including diamonds, is dependent on colour, cut, carat and clarity. After pointing out that the expression 'inclusions' is used to refer to 'flaws', he submitted that the identification of flaws in gem stones, especially diamonds, is difficult because of refraction. Therefore, he submitted that different methods to identify flaws have been used for centuries. He then submitted that the inventors of the claimed invention, through extensive research and analysis, found that selenium is a material with a refractive index very close to that of diamond. This material is ordinarily found in solid form. By converting selenium to liquid or molten state, he stated that the inventors found that it could be used as an immersion medium for detecting inclusions in diamond.

7. He also pointed out that a patent was granted for the claimed

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invention by 14 jurisdictions, including by the United States Patent Office (USPTO) and the European Patent Office (EPO), after considering the same prior art as was considered by the Indian Patent Office. In order to substantiate the contention regarding the grant of patent in other jurisdictions, he referred to page 11 of Volume I of additional documents. By referring to page 138 of Volume I, he pointed out that the EPO considered prior art documents D1 to D5 before granting a patent to the claimed invention. By referring to page 182 thereof, he pointed out that the USPTO considered prior art documents D1 to D4 and D14 while granting a patent.

8. He then submitted that the International Preliminary Report on Patentability (the IPRP) recorded that the claimed invention was novel, inventive and has industrial applicability after examining prior art documents D1, D3 and D4. With specific reference to the discussion on D1 therein, at paragraph 1.3 (page 3010 of volume 19),

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he submitted that it was concluded therein that D1 does not disclose any liquid with refractive index within 2 and 2.4. Likewise, with reference to the discussion therein of D4 at paragraph 2.4 and 2-5 (page 3011 of volume 19), he contended that it was concluded in the IPRP that D4 does not contain even a hint to a skilled person to use liquid selenium for purposes of identifying inclusions in diamonds. Although the written opinion of the International Searching Authority (the ISR) was placed before the Indian Patent Office, he submitted that the document was not dealt with or considered. He further submitted that the ISR referred to prior arts D1, D2, D3, D4 and D14. He pointed out that D1 was considered as the closest prior art, and that D2, D3, D4 and D14 were considered as documents pertaining to the general state of the art and and not of particular relevance.

9. By referring to prior art D1, which was published on 20.09.1977, learned senior counsel pointed out that it pertains to the

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detection of inclusions in precious stones by immersion thereof in a liquid with a refraction index almost equal to that of the stone. He contended that D1, however, did not identify any liquid with a refractive index close to that of precious stones. Turning to prior art D2, which was published on 01.05.1979, he submitted that it pertains to a process and apparatus for ascertaining the value of gems. By referring to lines 24 to 25 of the complete specification of D2, he pointed out that it recites that the liquid should be as transparent as possible. Therefore, he contended that it teaches away from the claimed invention because selenium in liquid form is viscous and far from transparent. As regards prior art D3, which was published on 04.12.2003, he submitted that it provides for a method of identifying and tracking gemstones and not the detection of inclusions therein.

10. As regards prior art D4, which was published on 14.07.1952, he submitted that it deals with the measurement of the refractive index of liquid selenium and has nothing to do with the diamond or

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gem industry. He also pointed out that the refractive index of liquid selenium is inversely proportional to increases in temperature, whereas the refractive index of diamond is directly proportional thereto. Since prior art D4 does not deal with diamonds or gems or the detection of inclusions therein, he submitted that it is non-analogous prior art. With regard to prior art D5, which was published in the year 1934, he submitted that it pertains to the identification of optical properties of minerals by crushing such minerals into powder form. Since ornamental diamonds cannot be crushed, he submitted that it teaches away. As regards prior art D14, which was published in the year 2001, he submitted that it relates to grading, testing and identifying gemstones. He also submitted that it discloses the use of a translucent vessel and translucent liquid and does not recite anything about refraction index or temperature. Thus, he concluded that the claimed invention would not be obvious to a person acquainted with any of the above prior art.

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11. Mr.Sandeep Grover, learned counsel for the appellant, continued arguments thereafter. He began his submissions by referring to precedents. He first referred to the judgment of the Delhi High Court in *Avery Dennison Corporation v. Controller of Patents and Designs(Avery Dennison), 2022 SCC OnLine Del 3659*, particularly paragraphs 10 to 40 thereof, with regard to the various approaches to obviousness analysis and the need to avert hindsight-based analysis. For the proposition that a mosaic of prior art should not be made based on hindsight, he referred to the judgment of the Delhi High Court in *Bristol-Myers Squibb Holdings Ireland Unlimited Company & Ors. v. BDR Pharmaceuticals International Pvt. Ltd. & Anr. (Bristol-Myers), 2020 SCC OnLine Del 1700.* For the proposition that only analogous prior arts should be considered, he relied on the judgment in *Pharmacyclicals LLC v. Controller General of Patents, Designs, Trademarks, Geographical Indications and others(Pharmacyclicals), MANU/IC/0044/2020.* The judgment of the Division Bench of the

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Delhi High Court in *F.Hoffmann-La Roche and Others v. Cipla Limited(Hoffmann-La Roche), 2015 SCC OnLine Del 13619,* particularly paragraphs 139, 145 and 151, was relied upon with regard to the manner of undertaking obviousness analysis. For the same purpose, the judgment of the Delhi High Court in *Agriboard International v. Controller of Patents and Designs (Agriboard International), 2022 SCC OnLine Del 3659,* was referred to. The judgments in *Avery Dennison, Societe Des Produits Nestle SA v. The Controller of Patents and Design & another, C.A. (COMM IPD PAT)- 22/2021 and Brugger & others v. Medic Aid Ltd. (Brugger)[1996] RPC 635* were relied upon to contend that if there is a long time gap between the prior art document and the invention under consideration, the invention is not obvious.

12. Learned counsel pointed out that the appellant had submitted the expert opinion of Professor Oded Navom. With specific reference to paragraph 8 thereof, he submitted that the expert deposed that the person skilled in the art is a person equipped to

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identify inclusions in diamonds and precious gems. According to him, the said expert opinion was disregarded by the first respondent and that the impugned order was vitiated on that count.

13. With reference to the conclusion in the impugned order that the appellant did not make sufficient disclosure, learned counsel for the appellant submitted that the statutory obligation on the appellant is to disclose the best method of working the invention. With reference to the complete specification and the disclosures therein with regard to temperature, light wave length and composition of the immersion liquid, he submitted that the statutory obligation was fulfilled. As regards the finding that the appellant did not disclose the method of melting selenium, he submitted that no claims are being made with regard to any particular method of melting selenium and, therefore, non-disclosure of the method of melting selenium does not lead to the conclusion that the claimed invention suffers due to insufficient disclosure or not being sufficiently

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enabled.

14. In support of the proposition that grant of patent by other jurisdictions, especially after considering the same or substantially similar prior art, is a material consideration, he relied on the judgments in *Arthritis Relied Plus Limited v. Controller of Patents, MANU/IC/0001/2021 (*especially paragraph 11); *Stempeutics Research Pvt. Ltd. v. Assistant Controller of Patents, MANU/IC/0023/2020 (*especially paragraphs 33-34); *Tony Mon George v. Assistant Controller of Patents, 2020 SCC OnLine IPAB 116 (*especially paragraphs 28-31); and *Reaxa Limited v. The Controller of Patents, MANU/IC/0058/2020(*especially paragraph 15).

15. In response to these contentions, Mr.Parthasarathy, learned counsel for the sixth respondent, opened his arguments by pointing out that Section 2(1)(ja) of the Patents Act, 1970 (the Patents Act) imposes two requirements. The first requirement is that the features of the invention should show technical advancement or economic

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advantage or both over prior art and the second that such feature should not be obvious to a person skilled in the art. Since prior art D1 discloses that a liquid with a refractive index close to that of the precious stone could be used to detect inclusions, he submitted that the patentee of D1 could have sued the person who used liquid selenium during the life of that patent. As regards prior art D5, he submitted that it discloses the refractive index of non-opaque minerals, including diamond. With reference to prior art D4, particularly figure 3 thereof, he submitted that the appropriate temperature range from 18°C to 365° C is recited therein. He further submitted that both temperature and wavelength are indicated in prior art D4 and that the complete specification of the claimed invention was admittedly derived from prior art D4.

16. The next contention of Mr.Parthasarathy was that the Controller is not bound by the determination of the USPTO or the EPO. He then submitted that the prosecution history of the EPO and

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the USPTO discloses that the obviousness analysis carried out by such authorities was not robust. With reference to the EPO, he pointed out that prior art D1 was classified as a document of particular relevance which renders the invention obvious to a person skilled in the art. Subsequently, in the IPRP, this position was altered and the claimed invention was held to be inventive because D1 does not enable and D5 does not provide for the use of selenium. In arriving at this conclusion, he submitted that the approach was modified inasmuch as initially the comparison started with D1, whereas later the comparison was made by starting with D3 instead of D1.

17. As regards the USPTO prosecution, he submitted that prior art D4 [*Saker*] was cited therein as also other literature on immersive liquids with high refractive indices. Initially, the claimed invention was rejected on the basis of prior art document D2 (*Bruckman*), *Altman* and *Porat* and not on the basis of *Saker*. Learned counsel

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submitted that the appellant herein made amendments thereafter in response to the examination report, and that the patent was granted without any discussion on Saker. Mr.Parthasarathy next contended that the person skilled in the art would be a graduate in physics or chemistry, who is capable of operating the requisite equipment for the detection of flaws. In order to substantiate the contention that the complete specification contains inadequate disclosure of the immersion medium, he pointed out that it merely provides a temperature range but not the specific temperature. Mr.Parthasarathy also contended that the inverse proportionality of diamond and selenium with regard to the effect of temperature on the refractive index is evident from *Saker* (D4). Therefore, he submitted that the claimed invention would be obvious to the person skilled in the art.

18. Mr.Adarsh Ramanujan, learned counsel, made submissions thereafter on behalf of the ninth respondent. He commenced his

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submissions by dealing with the insufficiency of disclosure and lack of clarity, which are essential requisites under section 10(4) and 10(5), respectively, of the Patents Act, 1970. By referring to the temperature range specified in the complete specification, learned counsel submitted that there is complete lack of clarity because a range running from 100° C to 400° C is specified although the melting point of selenium is 220^0 C. He then pointed out that the complete specification uses the language 'substantially comprising selenium', and that there is no clarity as to whether 'substantially comprising' means 51%, 75% or 90%.

19. As regards obviousness analysis, he pointed out that the Chancery Division, England and Wales, in *Lilly Icos v. Pfizer Limited (Lilly Icos) [2000] All ER (D) 1726,* held that public policy requires that the person skilled in the the art be imputed with complete knowledge of prior art. He also referred to the judgment of the Intellectual Property Appellate Board (the IPAB) in *Sankalp*

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Rehabilitation Trust v. F.Hoffmann-La Roche, judgment dated 2.11.2012, particularly paragraph 42, in that regard. By relying on the judgment of the United States Court of Appeals for the Federal Circuit *In re Clay, 966 F.2d 656,* he contended that prior art is analogous not only when it is from the same field of endeavour but also when it is reasonably pertinent to the particular problem with which the inventor is involved. Since both prior art documents D4 and D5 are reasonably pertinent, he submitted that that obviousness analysis should be undertaken on the assumption that the person skilled in the art has full knowledge of all the prior art, especially prior arts D1 to D5.

20. His next contention was that while analyzing whether the claimed invention lacks an inventive step, the text of Section 2(1)(ja) of the Patents Act calls for two statutory questions to be considered. First, whether there is a technical advance or economic significance or both. Relying on Section 3(d) of the Patents Act, he submitted that

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using the known properties of a known substance, selenium, disclosed in D4 for an alleged new use as an immersion liquid is not a technical advance. Second, whether the invention is obvious to the person skilled in the art. Citing the Report of the WIPO Standing Committee on the Law of Patents, July 2015 (the WIPO Standing Committee Report on Patents)[paragraphs 15, 33], he submitted that the person skilled in the art should be presumed to have had access to everything in the prior art and, in particular, the documents cited in the international search report. He also referred to paragraph 13.11 of the PCT International Search and Preliminary Examination Guidelines (the PCT ISPE Guidelines), which provide, in relevant part, as under:

> *"13.11....If the problem on which the invention is based and which arises from the closest prior art prompts the person skilled in the art to seek its solution in another technical field, the person skilled in the art in that field is the person qualified to solve the problem."*

By further relying on the judgment of the Board of Appeal of the

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European Patent Office in *M.A.I.L. Code Inc. v. Neopost Limited, T 0986/96-3.4.1, Decision dated 10.08.2009,* he submitted that a notional PSITA team from different technical fields should be formed when different parts of the problem requires experts from different fields for its resolution. Accordingly, in this case, he contended that the person skilled in the art would be a notional team consisting of an inclusion detection expert and a material scientist.

21. His next contention was that analogous prior art should be identified not only with reference to the problem that the inventor initially identified but also with reference to the closest prior art. He therefore submitted that the problem to be solved is not the subjective problem of identifying inclusions in diamonds, but the objective technical problem disclosed by the closest prior art, particularly D1, i.e. 'identification of a liquid that matches the refractive index of diamond'. By referring to the judgment of the US Supreme Court in *KSR International Co. v. Teleflex (KSR International)*,

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550 US 1 (2006), he contended that a flexible approach imbued with common sense, and not a rigid approach, should be adopted while undertaking obviousness analysis. While doing so, if common sense indicates that prior art be combined, mosaicing prior art would be the logical course for a person skilled in the art. By pointing out that the number of options open to the person skilled in the art is a material factor in obviousness analysis, he submitted that there were a narrow set of options in the present case and that routine investigation would have resulted in the claimed invention. In support of the contention that the outcome of such routine investigation would be treated as obvious, he relied on the judgment of the Hon'ble Supreme Court in *Bishwanath Prasad Radhey Shyam v. Hindustan Metal Industries (Bishwanath Prasad), MANU/SC/0255/1978*, particularly paragraph 21 thereof.

22. Learned counsel further contended that D4 and D5 constitute 'common general knowledge' or 'background knowledge'.

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They together teach that the refractive index of any material is affected by wavelength and temperature and selenium or selenium comprising material is appropriate for use as an immersion medium because the refractive index thereof is close to that of diamond. If D1, D2 or D3 is combined by PSITA with this background knowledge, he contended that the claimed invention would be obvious because D1-D3 teach that a liquid with a refractive index close to that of the relevant precious stone should be selected as the immersion medium. Be drawing a parallel between refractive index and coefficient of expansion, which was used as an illustration in *Generics (UK) Ltd. v. Daiichi Pharmaceutical Co. Ltd. [2009] EWCA Civ 646,* he contended that it would be obvious to the PSITA team to look for liquids with a refractive index close to that of diamond. Therefore, he contended that choosing liquid selenium as an immersion medium was by routine experimentation. Hence, it was no more than a workshop modification, which does not qualify as an inventive step. He also relied on the judgment in *Genentech Inc. v.*

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Hospira Inc. (Genentech), 946 F.3d 1333, to contend that "*when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.*"

23. He concluded his submissions by rebutting the appellant's contention that the third and ninth respondents acted in concert by submitting that a bare perusal of the pleadings would indicate otherwise. Supplementing this, he also submitted that section 25(1) of the Patents Act, 1970 enables 'any person' to file a pre-grant opposition.

24. Mr.P.S.Raman, learned senior counsel, who appeared on behalf of the fifth respondent, made submissions thereafter. His first submission was that the grant of patent in other jurisdictions does not tilt the scales in favour of the appellant because 98% of diamond polishing is done in Surat, Gujarat. He next contended that the

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claimed invention becomes obvious to a person skilled in the art on account of prior art documents D1, D4 and D8. With reference to prior art D8, he contended that it is diamond-specific and also describes the use of liquid selenium to discover flaws or inclusions. He then pointed out that D1 and D2 disclose that immersing the diamond in a liquid with a refractive index close to that of diamond would enable detection of inclusions. After pointing out that D4 discloses the refractive index of liquid selenium, he contended that any person skilled in the art would be in a position to combine the prior art and arrive at the claimed invention. As regards non-disclosure, he submitted that the complete specification refers to 'substantially comprising selenium', but fails to disclose the other ingredients.

25. The last aspect dealt with by him was the antiquity of prior art. By referring to the judgment of the US Supreme Court in *Graham et al v. John Deere Co. of Kansas City et al(Graham), 383 U.S. 1 (1965),* he

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submitted that antiquity would be a secondary consideration provided there was a long-felt need for a solution to the problem. By further referring to the judgment in *Brugger and others v. Medic Aid Limited (Brugger)[1996] RPC 635*, he submitted that the fact that the document is old does not *per se* mean that it cannot be the basis for an obviousness attack. Relying on *In re Rosenberger, 116 F.2d 507*, and *Apple Inc. v. Samsung Electronics Co. Ltd. and others (Apple), 816 F.3d 788 (2016)*, he contended that the appellant failed to discharge the burden of establishing that attempts to identify an appropriate immersion medium on the basis of prior art D1, D2 or D3 failed.

26. Learned counsel for the appellant made submissions in rejoinder thereafter. Learned counsel for the appellant first addressed the issue of *locus standi*. He submitted that the third respondent filed the pre-grant opposition while he was employed as a patent agent by a law firm, which now represents the ninth respondent. By reference to the written arguments of the third respondent before the

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Controller, learned counsel submitted that the same written arguments have now been submitted by the ninth respondent. By relying on *Dhaval Diyora v. Union of India, MANU/MH/1879/2020* and *Pfizer Products Inc. v. Controller of Patent and Designs, 2020 SCC OnLine IPAB 19,* he contended that the expression 'any person' in sub-section (1) of Section 25 of the Patents Act should not be construed so widely as to embrace persons, such as the third respondent, with oblique and *mala fide* motives. As regards the fifth respondent, he submitted that the said respondent relied on prior arts D1 to D3 and D13 before the Patent Office, whereas the said respondent now relies on D8. As regards prior art D8, he submitted that it was not dealt with in the impugned order and that the opponents cannot add to the order. With regard to the reliance placed on the prosecution history before the USPTO and EPO, he submitted that such prosecution history was not part of the record. He then referred to the consideration of the same prior arts by the USPTO and the EPO and to the fact that no opposition was lodged

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before the EPO.

27. Apart from judgments discussed earlier, he referred to the following:

(i) Farbewerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, a Corporation and others v. Unichem Laboratories and others (Farberwerke Hoechst), MANU/MH/0064/1969;

(ii) *Grain Processing Corporation v. American Maize Products Company, MANU/USFD/0063/1988;*

(iii) *Enercon (India) Ltd. v. Aloys Wobben (Enercon), ORA/08/2009/PT/CH;*

(iv) *Groz-Beckert KG v. Union of India and others, MANU/WB/0140/2023;*

(v) *Chemours Company FC LLC v. Daikin Industries Limited, Daikin America 4F. 4Th 1370, 1376 Fed.Cir.2021;*

(vi) Schlumberger Holdings Limited v. Elecxtromagnetic Geoservices AS (Schlumberger), [2010] EWCA Civ 819; and

(vii) Novartis AG and another v. Natco Pharma Limited, 2021 SCC

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OnLine Del 5340.

28. According to learned counsel, prior art D4 is non-analogous and that non-analogous prior art should not be considered. By also referring to the deposition of the expert, Professor Oded Navon, in connected proceedings, he submitted that the person skilled in the art would be a person who determines inclusions. With regard to the manner of conducting obviousness analysis, he referred to the judgment of the Hon'ble Division Bench of the Delhi High Court in *Hoffmann-La Roche*. Based on these judgments, learned counsel submitted that the invention is specific to the diamond industry. Therefore, the person skilled in the art would be a person engaged in the detection of inclusions in diamonds. If viewed from the perspective of such person, he submitted that the claimed invention was certainly not obvious.

29. He reiterated that the best method was disclosed and, therefore, the obligations under Section 10 of the Patents Act were

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satisfied. He justified the use of the expression 'substantially comprising selenium' by pointing out that the said expression was used so as to deter potential infringers from adding a little sulphur or tellurium in order to defend a charge of infringement. He concluded his submissions by stating that the appellant is ready and willing to amend the claim to 'consisting of selenium' instead of 'substantially comprising selenium'.

Discussion, analysis and conclusions

Locus Standi

30. Before dealing with the merits of the dispute, the preliminary objection that the third and ninth respondents do not have *locus standi* warrants a brief discussion. At the pre-grant but post-publication stage, sub-section (1) of Section 25 of the Patents Act enables "any person" to oppose the grant of patent by way of representation in writing. Prior to its amendment by the Patents (Amendment) Act, 2005 (the 2005 Amendment), sub-section (1) only

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enabled a "person interested" to oppose the grant of patent. Significantly, both at the post-grant stage under sub-section (2) of Section 25 and for purposes of seeking to revoke a grant under sub-section (1) of Section 64, only a "person interested" and not "any person" is entitled to request that the grant be revoked. The Statement of Objects and Reasons for the 2005 Amendment contains no indication as to the reason for the amendment. Undoubtedly, however, as a consequence thereof, the pre-grant opponent need not meet the threshold of establishing that he is interested in the field of invention because he is engaged in that field in some capacity, such as producer or researcher, and, therefore, deals with products or processes in that field.

31. Does that mean that no yardstick is fixed by statute to decide on *locus standi* at the pre-grant stage? Learned counsel for the appellant relied on *Dhawal Diyora* and *Pfizer Products* to contend that an impostor or front for another should not be permitted to thwart a

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patent applicant. In *Dhawal Diyora,* the Bombay High Court was dealing with a writ petition, i.e. a discretionary public law remedy. The opposition was filed after hearings on the application for grant had concluded. In that context, after holding that both the patent application and the pre-grant opposition are intended to be decided at the same time, the Court also examined whether the petitioner had approached the Court *bona fide.* In my view, when a person opposes a patent application at the pre-grant stage before the Patent Office, he exercises a statutory and non-discretionary remedy. Therefore, when the statute enables "any person" to lodge such opposition, albeit in the manner prescribed, the Patent Office is not entitled to reject the application on the ground of *locus standi* at the pre-grant stage. That does not mean, however, that the Patent Office cannot consider objections on the ground that the opposition is not *bona fide.* As with any judicial or quasi-judicial authority, the assessment as to whether the opposition is *bona fide* or not would have a bearing while deciding on the admissibility, relevance, materiality and weight of

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evidence adduced by such party, especially in affidavits by way of evidence. In any event, the above discussion is of limited relevance in this case because many of the opponents are engaged in the same field of activity as the field of invention and would, consequently, even meet the more exacting "person interested" threshold. I turn next to the merits of the dispute.

Novelty

32. On the merits, the first question that arises for consideration is whether the claimed invention meets the novelty test. In order to effectively determine this and other relevant issues, it is necessary to set out independent claim 1, which is as under:

> *1. A method of determining a position of at least one inclusion in a diamond, comprising:*
>
> *(a) providing the diamond placed within a material substantially comprising selenium, which has a refractive index within 0.1 of that of the diamond at a corresponding light wavelength between 1 and 2 microns and at a pre-determined temperature within a range between 100 and 400*

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degree Celsius, said material when used for placing the diamond there within being in a liquid or gel-like state;

(b) controlling the temperature of the material to maintain the material and the diamond to be at said pre-determined temperature;

(c) illuminating the diamond in said material at said pre-determined temperature with light including said wavelength, and imaging the diamond in said material at said pre-determined temperature by detecting light of said wavelength, to obtain diamond images; and

(d) determining the position of at least one inclusion based at least in part on images of at least one inclusion in the diamond images."

The position is settled beyond doubt that combining more than one prior art is not permissible while deciding novelty. Put differently, unless the Patent Office determines that all the features of a claimed invention are anticipated in a prior art, rejection on this ground is not tenable. Although novelty was raised as a ground of opposition by more than one opponent before the Patent Office, none opposed the

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appeal on this ground. More importantly, on examining cited prior art, I find no room to hold that the claimed invention should be denied on this count. This leads me to the heart of the dispute, i.e. whether the claimed invention satisfies the requirements of Section 2(1)(ja) of the Patents Act. Since the patent application was rejected primarily on this ground, it is pertinent to set out the findings of the Assistant Controller.

Findings on inventive step

33. The Assistant Controller recorded *inter alia* the following findings on lack of inventive step while rejecting the application:

> *"... The skilled person in the art can be motivated with the teachings of liquid selenium in D4 which is very close to the refractive index of diamond 2.417-2.419 and also suggested in D1 and D2, used as an immersion medium for the determination of inclusions in diamond. According to D4, the refractive index of selenium decreases from about 2.47 to about 2.30 for the*

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temperature range from 18°C to 414°C respectively in the IR wavelength 1-2.5 microns and skilled person can select suitable refractive index from the range disclosed therein with respect to the temperature and wavelength, which is a coherent thread from D4 leads to the present invention. Features claimed in the present invention, selenium's refractive index range 2.3-2.5, temperature 100°C to 400°C and IR wavelength 1-2 microns by the applicant is disclosed in D4 as refractive index for selenium about 2.47-2.3, temperature 18°C to 414°C and IR wavelength 1-2.05 microns,but using selenium as immersion medium for detecting inclusions in diamond is the only feature not disclosed in D4. Whereas the applicant himself agreed in para 5, page 10 of the specification that the above values are derived from D4, the experimental results of "The Optical Properties of Liquid Selenium." Since the applicant himself agreed the features of D4 is entirely used for the present invention, it is nothing, but mere application of the experiment and selection of features disclosed in D4 using

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selenium as immersion medium for detecting inclusions in diamond. ...

....Suitability, stability of melts of selenium and/or sulfur as immersion liquid for a wide range of refractive index between 2.05 to 2.72 has been disclosed in D5.

... Reading the disclosure of D1-D3, the skilled person in the art facing the technical problem of which immersion liquid is to be used, would be motivated to implement teachings of D4 in the method of D1-D3, and would obviously try molten selenium as an immersion liquid at temperature and wavelength conditions taught in D4 such that it has refractive index within 0.1 of that of the diamond."

Obviousness analysis

34. In order to test the sustainability of the above findings and proceed with obviousness analysis, it is necessary to identify the person skilled in the art (the PSITA), including the level of skill and skill set attributable to such person. In *Rhodia Operations v. Assistant Controller of Patents and Designs, 2024:MHC:6024;*

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MANU/TN/0256/2024, after considering many of the judgments cited at the bar in this case, I analysed the level of skill and attributes of a PSITA. Since these aspects are germane for the adjudication of this dispute, I set out below the relevant paragraphs from said judgment:

> *"26. As is evident from the above survey, the definition of inventive step in the Patents Act is closer to that in the UK Patents Act because both statutes use the expression "person skilled in the art" unlike the US Patents Act which uses the expression "person having ordinary skill in the art". That said, what is the level of skill: is it average, good, very good, excellent, or extraordinary? The text of Section 2(1)(ja) does not place any of the above qualifiers or any analogous variant before the adjective "skilled". Is there contextual guidance regarding the level of skill? On scanning the Patents Act, I find that Section 64(1)(h), which provides for revocation of patents for failure to enable, prescribes as under: Subject to the provisions contained in this Act, a patent, whether granted before or after the commencement of this Act, may be revoked on a*

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petition of any person interested or of the Central Government or on a counter-claim in a suit for infringement of the patent by the High Court on any of the following grounds, that is to say -

> *(h) that the complete specification does not sufficiently and fairly describe the invention and the method by which it is to be performed, that is to say, that the description of the method or the instructions for the working of the invention as contained in the complete specification are not by themselves sufficient to enable* ***a person in India possessing average skill in, and average knowledge of, the art to which the invention relates****, to work the invention, or that it does not disclose the best method of performing it which was known to the applicant for the patent and for which he was entitled to claim protection." (emphasis added).*

The words to which emphasis was added in the above provision indicate that the statute posits a different notional person for determining whether the invention had been sufficiently enabled. This

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person, in contrast to the hypothetical person in Section 2(1)(ja), is a person in India possessing average skill in and average knowledge of the art to which the invention relates. The absence of the words "in India" in Section 2(1)(ja) indicates that the person could be based anywhere in the world, including India.

27. Section 2(1)(ja) uses the word "skilled" as an adjective qualifying the noun "person". Most standard dictionaries define the adjective "skilled" as referring to a person having the ability to do a job, task or activity well. I am mindful of Judge Learned Hand's wise counsel in Markham v. Cabell, 326 U.S. 404 (1945), that one should not make a "fortress of the dictionary". So, I remind myself of the context: to determine whether the technical advance or economic significance or both would be obvious to a person skilled in the art. By reckoning that such skilled person could be from a range of disciplines depending on the field of invention, I ask myself what level of ability comes to mind if a person were to be described in any of the following ways: skilled medical doctor; skilled automobile

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engineer; skilled physicist; skilled carpenter; or skilled immunologist. In each case, the straightforward answer is a person possessing the necessary attributes to do the job well. I bear in mind statutory context, i.e. the absence of the qualifier "average" in Section 2(1)(ja) in contrast to its use in Section 64(1)(h). I recognise that the statute neither uses words that indicate enhanced levels of skill such as "highly", "outstandingly" or "extraordinarily" nor words that indicate a low or average level of skill such as "low" or "ordinary" or "average" to further qualify the "skilled" person. By taking into account all of the above, on balance, in my view, the "person skilled in the art" as per Section 2(1)(ja) is a person whose skill level is good/greater than average. Because most disciplines/arts require a range of skills or skill set, this person should possess the skill set to do the job well.

28. I turn next to the attributes of a person skilled in the art. Depending on the art, educational/ academic or vocational qualifications are likely to be required. Work experience would certainly be required because

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one does not ordinarily describe a person with the requisite educational qualifications but no work experience as skilled in the art. What about ability to use the tools of trade? Clearly, a person skilled in the art would be adept at using the tools of trade. With regard to knowledge, as held in Lily Icos, on account of the underlying public policy requirement that no monopoly right should be granted over matters previously known in the art or obvious to a person with knowledge of prior art, a level of knowledge that a real person skilled in the art is unlikely to possess is imputed to the hypothetical person. Such imputation of knowledge is not, however, unqualified and is restricted to matters previously known in the art in which such person or team of persons is skilled. The legislative intent, as gleaned from text, is certainly not that this person should be omniscient. This leads to the question: in what respects should this notional person be different from a real person skilled in the art?

29. For instance, is it necessary that this person should be forgetful of other prior art once she identifies the closest prior art? I do not think

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that it is necessary to impute such trait although it is necessary to be mindful of the risk of hindsight-based mosaicing. Should this person be lacking in imagination? While the extent of imaginativeness varies from person to person, imagination is an inherent human quality and the underlying public policy of fostering inventiveness does not justify banishing imagination in the notional person. What about inventiveness? Plainly, the text of the statute requires a patent applicant to establish the existence of an inventive step and, if obviousness is examined from the perspective of a skilled person with ingenuity and inventive capacity, every patent application would fail as would the public policy of fostering genuine invention. Indeed, even de hors the public policy justification, the expression "person skilled in the art" does not ordinarily connote a person with inventive capability. Thus, except to the extent that statutory prescription or the underlying public policy call for a departure from the characteristics of a real person skilled in the art, the notional person should, in my view, mirror a real person as closely as possible. Adopting such

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approach has the benefit of enhancing the quality of obviousness analysis by ensuring that it remains rooted in the real world. In sum, other than the unreal levels of knowledge imputed to the notional person, such person should possess all the qualities that a real person proficient in the art would possess." [emphasis added]

35. In *Lilly Icos*, Justice Laddie held that public policy mandates that the PSITA should be imputed with complete knowledge of the prior art in the field of invention. I agree with the said conclusion because patent laws are intended to foster inventiveness and not grant patents for the discovery or identification of something existing, even if buried or tucked away, in the prior art or something obvious on the basis of prior art. Two caveats are, however, necessary. What is imputed is unreal levels of knowledge of the pieces of information, however vast, constituting prior art or common general knowledge on the priority date but not the unreal ability to combine or weave these elements together unless there are

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clear pointers, direct or indirect, in that regard in the prior art. While imputing such knowledge, it is also critical to bear in mind that the knowledge of the person skilled in the prior art would be limited to the field of invention because the PSITA is not omniscient. Thus, identifying the field of invention plays a significant role in identifying the PSITA and, as a consequence, imputing the identified PSITA with knowledge of prior art in such field.

Identifying the PSITA or the PSITA team

36.The problem that the inventor set out to resolve was to determine the value of a gemstone by finding an improved method or process of identifying flaws or inclusions, including their size, location and other characteristics, in gemstones. The field of invention is, therefore, the identification of inclusions in gemstones. This task would require both expertise in gemstones, particularly knowledge of the types of inclusion (illustratively, cavity, chip, cloud, crystal, knot, needle, silk and veils) seen in different

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gemstones, especially diamonds, and proficiency in using tools of trade such as microscopes, lighting and other devices for the detection of such inclusions. The former task is typically undertaken by a gemologist and the latter either only by the gemologist, if sufficiently qualified, or in coordination with a technically qualified person. Therefore, it would be appropriate that the PSITA is a team with these skills. Mr. Adarsh Ramanujan relied on the WIPO Standing Committee Report on Patents and paragraph 13.11 of the PCT ISPE Guidelines to contend that the PSITA team should include a person from a different technical field if the closest prior art leads to such field. He contended that D1, which is the closest prior art, discloses that the problem to be resolved is the selection of an immersion liquid with a refractive index close to that of diamond. For such purpose, he further contended that the PSITA team should include a material scientist. This contention warrants close consideration.

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37. Because obviousness analysis is required to be undertaken by donning the mantle of the PSITA, identifying a person or team with the requisite skill set to carry out this exercise meaningfully is vital. An important distinction should, however, be borne in mind while undertaking this exercise, i.e. the distinction between assembling the PSITA team from the field of invention or even the closest prior art, on the one hand, and working backwards from the claimed invention to assemble a team capable of coming up with the claimed invention, on the other. Another critical aspect is that there could be inventiveness in "marrying together concepts from two unrelated arts" as held in *Inhale Therapeutic Systems v. Quadrant Healthcare, [2002] RPC 21* and, consequently, the PSITA team should not be formed on the basis of the solution provided by the invention. The Court of Appeals grappled with the predicament of identifying the PSITA team when the claimed invention requires expertise in more than one field in *Schlumberger,* which was cited by learned counsel for the appellant.

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38. The patent, in that case, pertained to the use of marine Controlled Source Electromagnetic (CSEM) survey to determine whether sub-sea sedimentary rock, which was discovered through seismic methods, contained hydrocarbon. Unlike the Patents Act, which clearly assumes a different PSITA of average skill and knowledge in India for enablement, the European Patent Convention and UK Patents Act use the same language to describe the PSITA for all purposes. In that factual and statutory context, the Court considered whether the PSITA team would be the same for obviousness analysis, assessing scope of claims and sufficiency. After recording that the PSITA team is likely to have the same composition in most cases, the Court noted that the team could be different in some cases for purposes of obviousness and sufficiency. The Court eventually concluded, on the facts of that case, that the PSITA should be identified by asking whether an exploration geophysicist would

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have recognised the need for using the services of a CSEM expert or *vice versa.* If not, it was held that obviousness may be examined from the perspective of either an exploration geophysicist or a CSEM expert but not both acting in combination. The following paragraph is particularly relevant:

> *"65. In the case of obviousness in view of the state of the art, a key question is generally "what problem was the patentee trying to solve?" That leads one in turn to consider the art in which the problem in fact lay. It is the notional team in that art which is the relevant team making up the person skilled in the art. If it would be obvious to that team to bring in different expertise, then the invention will nonetheless be obvious. Likewise if the possessor of the "extra expertise" would himself know of the other team's problem. But if it would not be obvious to either of the notional persons or teams alone and not obvious to either of them to bring in the other, then the invention cannot fairly be said to be obvious. As it was put in argument before us the possessors of the*

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different skills need to be in the same room and the team must have some reason for telling the team who could solve it what the problem is."

39. In *Michel Jalon v. GAO, T 422/93-3.3.1(Jalon),* which was cited by learned counsel for the ninth respondent, the Technical Board of Appeal of the European Patent Office dealt with a revocation application in respect of a patent for making security fibres by introducing luminescent rare earth chelates by a dyeing process, where such dyeing process was not known to be applied for this purpose in the prior art. The Technical Board noticed that the closest prior art disclosed the use of luminescent rare earth chelates, but not by a dyeing process, and held, in relevant part, as under:

"In the present case, however, the principle of introducing a rare earth chelate by a dyeing process quite clearly forms part of the solution to the technical problem to be solved (see points 3.4 and 3.5 above. The expert in dyeing cannot therefore be the skilled person who was faced with the task of solving the problem....

....The technical problem addressed by an

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invention must however be so formulated as not to contain pointers to the solution, since including part of a solution offered by an invention in the statement of the problem must, when the state of the art is assessed in terms of that problem, necessarily result in an ex post facto view being taken of inventive step"

40. The principles that can be gleaned from *Schlumberger* and *Jalon,* which I endorse, are that the PSITA team should not be formed based on the solution provided by the claimed invention, but that the closest prior art may be examined to ascertain whether the PSITA team should include a specialist from another discipline. If so, such person may be included. On the contrary, if the invention lies in marrying two disparate disciplines with no indication in prior art of such marriage, obviousness may be tested from the perspective of a specialist in each discipline, but not from the perspective of the two specialists acting in combination.

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41. Against this backdrop, I turn to the facts of this case to decide on the applicability and implication of the above principles. As is evident from the summary of the complete specification, the field of invention is the identification of inclusions in gemstones. Inclusions are materials trapped in the gemstone as they form and could be in the form of mineral crystals or cavities filled with liquid or gas. Inclusions often aid in identification, including in determining whether the gemstone is natural or synthetic. Such identification was carried out for several decades by using a loupe glass or other magnifying device. Later, microscopes were used for this purpose.

42. Therefore, as concluded earlier, the original PSITA team would be formed by only a gemologist if such person has the technical expertise to use advanced tools of trade (and not merely tools like the loupe) to identify inclusions in such gemstones or diamonds. Otherwise, a gemologist and a technically qualified person would form the team so as to be collectively well-versed in

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the different types of inclusion in gemstones, especially diamonds, and in the use of devices, such as microscopes, refractometers and lighting devices, for the detection thereof. Whether it would have been obvious to the PSITA, on the basis of prior art, to bring in an expert from another field and, if so, whether the claimed invention would be obvious in such circumstances remains to be considered. Based on the principles discussed earlier, since such expert cannot be picked based on the solution provided by the claimed invention, one cannot bring in a person with expertise in the optical properties of liquid selenium as part of the PSITA team to test obviousness. On the other hand, if the closest prior art provides a cue, a material scientist could be brought on board. I intend to examine prior art - both for this and the wider purpose of obviousness analysis - by starting with undoubtedly analogous prior art.

43. As a person or team of persons with good or above average ability in the identification of inclusions, it should be presumed that

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the PSITA is aware of literature relating to the gemstone/diamond industry, especially literature relating to the identification of inclusions. Out of the cited prior art, D1-D3 and D14 clearly fall within that category. Before turning to other prior arts, it is instructive to turn to these.

Prior arts

44. Prior art D1 is an invention titled "Process and Apparatus for Detecting Inclusions". The publication date is 20.09.1977. D1 discloses that inclusions in precious stones may be identified by scanning the stone with a concentrated beam of light, particularly preferably by completely immersing the stone in an immersion liquid with a refractive index close to that of the relevant precious stone. With specific reference to diamonds, D1 provides as under in lines 62-68 of column 1:

> *"The refraction index of the immersion liquid should preferably be as close as possible to the refractive index of the precious stone for the wave length of the incident beam, and in the*

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examination of diamonds it is preferably between 2 and 2.4, particular preference being given to a refractive index of at least 2.2."

D1 further recites as under in lines 56-63 of column 2:

"The cross-section selected for the light beam will preferably is about 0.03 mm and the distance between the scanning trajectories 0.02 mm.
This provides the advantage that even inclusions at the extreme limit of visibility for the naked eye can still be detected, the partial overlapping between the scanning trajectories making it doubly certain that no kind of occlusion will escape detection."

45. Certain aspects are noticeable. First and foremost, D1 teaches undertaking scanning preferably while the stone is immersed in an immersion liquid. Secondly, the complete specification of D1 does not disclose liquids with a refractive index close to that of any precious stone, including diamond. Thirdly, the light beam in D1 is within the range visible to the naked human eye. Since D1 is, without

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doubt, analogous prior art, one should proceed on the assumption that the PSITA is aware of D1. Since D1 speaks of an immersion liquid, albeit without specifying such liquid, I will assume, as Mr. Adarsh Ramanujan suggested, that a material scientist has joined the PSITA team at the invitation of the original team. Proceeding on that basis, the question that arises is whether the features of the claimed invention would be obvious from D1 to the PSITA team. Given that D1 indicates that a liquid with a refractive index close to that of the precious stone and that a light beam within the visible range should be used, it is conceivable that PSITA would look for the above. Whether that process would lead a non-inventive PSITA team to the claimed invention falls for consideration next and, for this purpose, it becomes necessary to examine other analogous prior arts.

46. Prior art D2 is an invention titled “Process and Apparatus for Ascertainment of the Valuation Data of Gems”. The publication date is 01.05.1979. The abstract of the invention indicates that it is a

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"process and apparatus for determining the presence and location of inclusions within gems." Because D2 is subsequent to D1 and also analogous, it is conceivable that the PSITA would examine D2 for answers that D1 does not provide. D2 recites that the gem is scanned by a narrowly bundled light bundle, and that "the inclusions disclosed in the gem can be ascertained in their position, for example with reference to the plane of the pane of the gem". D2 also recites that the gem be inserted in an immersion liquid reaching beyond the uppermost point of the gem for determining the size of inclusion. Claim 11 thereof stipulates that the refractive index of the immersion liquid is as closely as possible approximated to the refractive index of the gem for the wavelength of the incident light bundle. On examining D2 thoroughly, I find that it deals with the use of light bundles and immersion media for the ascertainment of the position of inclusions, but throws no light on specific immersion liquids for the detection of inclusions. Thus, the claimed invention would not be obvious from either D1 or D2 or even a combination thereof. I turn

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to D3 next.

47. D3 is an invention titled "Method and Apparatus for Identifying Gemstones". The publication date of D3 is 04.12.2003. From the field of the invention, it is evident that it is aimed at identifying and tracking gemstones, including diamonds. From the summary of the invention, it follows that the apparatus uses a laser, a scanning system and monitoring system to identify the orientation of inclusions in gemstones. While paragraph [0050] of the complete specification recites that the laser beam is selected from any light within the electromagnetic spectrum and that the most preferred is infra-red, paragraph [0054] thereof recites that the gemstone is secured in immersion fluid. Paragraph [0062] discloses that the immersion fluid may be any material which decreases the degree of refraction of light beams. Thus, as in the case of D2, it does not disclose or even advance the cause of finding a specific immersion

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liquid for use in the detection of inclusions.

48. Prior art document D14 is an invention titled "Apparatus and Method for Grading, Testing, and Identifying Gemstones". D14, which was published on 29.05.2001, recites as under with regard to one of its objects:

> *"Yet another object of the invention is to identify, delineate, and measure flaws and assign a clarity grade to a gemstone. This is accomplished by immersing a gemstone in refractive index liquid, illuminating the stone from the bottom/sides, and imaging it from the top. Additional illumination from the top, front, and side is obtained and a stone is rotated to obtain the best image of internal flaws, inclusions, etc. The captured image is analyzed by a data processor to delineate and measure any features. The size and the location of the features relative to the size of the gemstone and its cut is used to assign a clarity grade."*

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On carefully examining D14, I am unable to discern any disclosure of the refractive index liquid or even an indication that the refractive index of the immersion liquid should be close to that of the gemstone.

49. I next deal with prior art D8, which was described by learned senior counsel for the fifth respondent as the bridge between D1-D3 and D14, on the one hand, and D4-D5, on the other. Although the impugned order does not discuss prior art D8, it contains a statement that all cited prior arts were considered. Respondent 9 relied on prior art D8 and contended that it teaches the use of sulphur-selenium melts as an immersion medium for the detection of inclusions in diamonds. Therefore, D8 warrants examination. D8 is volume 11 of the "Encyclopedia of Industrial Chemical Analysis" published in 1971 by John Wiley & Sons, Inc. After stating that identification of flaws and inclusions in diamonds can be undertaken by preparing an immersion of the diamond in a medium having the

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same index of refraction as diamond, the following is *inter alia* stated:

> *" **The oldest method involves the use of sulphur-selenium melts (see Vol.2, p.568). There is a limit to the size of the grit which may be examined by this method. The thicker the layer of melt, the more nearly opaque it is.** Thick layers of melt result when working with coarse grits. Another problem is the difference of the chromatic dispersion between diamond and the melt. For this reason, it is advantageous to use monochromatic light. The most applicable is lithium light as it is within the range of wavelengths which are transmitted by the melt....*[emphasis added].
>
> ***Procedure***
>
> *Place the selenium in a small test tube and heat in a Bunsen flame under a hood until it is thoroughly melted. Add the proper amount of sublimed sulfur. Reheat the tube to just above the melting point (ca 150°C). Care should be taken to prevent sublimation of the sulfur, which would change the ratio of the selenium to sulfur and therefore the refractive index. If any sulfur should*

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condense in the upper part of the tube, scrape it down into the melt and mix thoroughly. Cool, then crush and grind the entire material to ensure homogeneity. Mix this powder with the diamond sample, place it on a microscope slide, heat to the melting point, and apply a cover slide. Press down the cover slide so that the layer of melt is as thin as possible." [emphasis added]

On perusal of D8, several aspects are noticeable. It deals with industrial diamonds. Since it deals with industrial diamonds, the optical methods extracted above deploy diamond grits, which are particles or grains. The procedure described in D8 discloses the following steps: melting selenium, adding sulphur thereto, waiting for it to cool, then crushing and grinding the mixture into powder form, mixing the powder with the diamond grit and placing it on a microscope slide, and applying and pressing down a cover slide. Thus, the process is totally inappropriate and unsuited for the identification of inclusions in ornamental gemstones not only because it envisages the use of diamond grits but also because the

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melt is required to be thin so as to avoid opacity.

50. Having dealt with the admittedly analogous prior art, I turn to D4 and D5 in that order. D4 is titled "The optical properties of liquid selenium" and is an article published by E.W. Saker, Physics Department, University of Reading, on 14.07.1952. Given the fact that D4 is non-patent academic literature that does not deal with gemstones or diamonds and is confined to the optical properties of liquid selenium, I am of the opinion that knowledge of D4 cannot be imputed to the original PSITA team. As regards the material scientist inducted into the PSITA team on the basis of the closest prior art - while recognising that it is unlikely that a real material scientist would be aware of D4 - the public policy underlying patent law impels me to impute knowledge of D4 to the notional material scientist. The consequence thereof calls for discussion. D4 sets out the refractive index of liquid selenium at about seven specific temperatures ranging from 18°C to 365°C. The graph (Figure 3)

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therein shows clearly that the refractive index of liquid selenium is inversely proportional to temperature and also records the refractive index relative to wavelength. The claimed invention refers expressly to D4 and records that the wavelength and temperature range were derived therefrom. In the factual context of this case, conspicuous by its absence from D4 is any reference to gemstones and, consequently, any comparative data between the optical properties of diamond and liquid selenium.

51. D5 is a book titled " The microscopic determination of the non opaque minerals"by Esper S.Larsen and Harry Berman. It was published by the United States Department of the Interior in 1934 and deals with the identification of a long list of minerals in powder form. As non-patent academic literature relating to minerals, knowledge of D5 cannot be imputed to any member of the PSITA team except the material scientist. D5 specifies that "fairly accurate measurements of the principal indices of refraction can be made on a

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very small quantity of mineral by embedding the powdered grains in media whose indices of refraction are known and comparing and matching the indices of the media with each of those of the mineral". Table 1 therein specifies the refractive index range of sulphur and selenium at a particular temperature. It provides that the refractive index of only about 27 minerals is above 2.72 and Table 3 thereof arranges minerals, including diamond, as per refractive index. Because D5 deals with the identification of minerals in powder form, it is evidently inappropriate for determination of inclusions in gemstones and the gemologist in the PSITA team would reject D5 even if it were mentioned by the material scientist. With this, the discussion on prior art is complete. Before drawing conclusions, I turn to the expert evidence on record.

Expert evidence

52. The evidence of two experts was placed before the Assistant Controller as D16, and such evidence merits consideration.

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Dr.Jayshree Panjikar gave evidence on behalf of the third respondent and Professor Oded Navon gave evidence in response on behalf of the appellant. Although the third respondent has chosen not to appear in this appeal, I deal with the evidence of Dr.Jayshree Panjikar because the evidence of both experts is on record. She holds a Ph.D. in Geology from the University of Heidelberg, Germany, and her dissertation was on gemstone minerals. She asserts in her affidavit that she has 40 years of experience in the field of gemstone identification and that she regularly uses immersion liquids. She has referred to prior art documents D3 and D8 in comparison with the claimed invention. With regard to D3, she deposed, in relevant part, as under:

> *"13.... The document US20030223054A1 discloses the very principle 876' application discloses viz. the diamond under examination/inclusion detection needs to be immersed in a medium having a refractive index substantially same or similar to that of the diamond to avoid or reduce the refraction of the*

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incident light upon entering the gemstone."

As regards D8, she deposed, in relevant part, as under:

> *"14. I understand that the document Snell & Ettre edited "Encyclopedia of Industrial Chemical Analysis" (specifically, at page 471 & 472) discloses the optical methods for the purpose of identification, and the examination of diamonds for flaws and inclusions.... I further understand that the Snell & Ettre recommend observation of the diamond grit by placing it on a microscopic slide covering it with a cover slide."*

By comparing D3 and D8 with the claimed invention, she recorded the following conclusions:

> *"15. I am of the opinion that – based on the conjoint reading of documents US20030223054A1 and Snell & Ettre, a person skilled in the field of Gemmology would find it obvious and in fact, ideal to employ a melt of selenium as an immersion medium for detecting flaws or inclusions in a diamond as of the earliest*

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priority date (22nd August, 2005) of the 876' application."

53. Professor Oded Navon holds a Ph.D. in Geology from the California Institute of Technology and his thesis was on the "chemical and mineralogical characterization of micro-inclusions in diamonds". In his affidavit, he discussed many of the cited prior art documents. With regard to D3/Warwick and D8, he states, in relevant part, as under:

> *" a) Warwick specifically relates to identification of gemstones at different stages during their lifespan, i.e. from rough gemstones to cut, polished, etc....It would not be obvious to the skilled person starting from Warwick and attempting to improve the methods used consistently in numerous different types of locations, some industrial, some more domestic such as shops, to look towards or even consider using as an immersion medium the sulfur-selenium melts of the Encyclopedia. This is not only because such a material is opaque in the visible range of the spectrum, but also because the*

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use of such an immersion material requires significantly elevated temperatures, i.e. it would require complex equipment which would be extremely impractical for such ubiquitous use, i.e. throughout the lifecycle of the diamond..."

By comparing and contrasting D5 and D8 with the claimed invention, he deposed, in relevant part, as under:

" 14.... Thus, both of these documents teach that the viewing is done upon solidification of the immersion medium around the mineral, and not at the temperature at which the diamond is immersed. Conversely, the methods used by Galatea require the diamond to be imaged at the same conditions at which it is immersed, i.e. at the same pre-determined temperature. The temperature of the immersion fluid must be at the pre-determined temperature during imaging, in order to ensure that the immersion medium exhibits the necessary properties, i.e. a refractive index within 0.1 of that of the immersed diamond and adequate transparency at the suitable spectral range to allow the imaging...."

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54. Eventually, after adverting to D5, D4 and D8, he deposed as under:

> *" 18. Therefore, I state that in spite of both the public knowledge available for over 50 years and the long-felt need for a solution for determining location of inclusions in a diamond, no one before the Applicant has thought that the solution is in imaging the diamond within an immersion material under such conditions that the refractive index of the medium is within 0.1 of that of the diamond, and more particularly, in some embodiments, by imaging the diamond within molten selenium and overcoming its opaqueness by detecting light of wavelength in the infra-red range, more particularly, in the range of 1-1.8 microns under the pre-determined temperature. It is clear that such a solution is a novel invention and absolutely non-obvious for the skilled person in the relevant art nor any other art."*

Learned counsel for the fifth respondent also referred to the cross-examination of Professor Oded Navon in a connected suit relating to

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the product patent. Although such evidence was not recorded in relation to this patent application, I refer to the same briefly. In answer to questions 102-113, he agreed that the refractive indices of selenium and diamond were known previously. He, however, stated that since the immersion medium should transmit light, in spite of knowing the physical properties, the problem of finding the right immersion medium for diamond was not resolved until the claimed invention.

Would the claimed invention be obvious to the PSITA?

55. Several critical aspects should be borne in mind while drawing conclusions. The natural state in which selenium is found is solid and not liquid, whereas the claimed invention makes use of selenium in liquid or molten state. As noticed from Saker/D4, the refractive index of selenium is inversely proportional to increases in temperature. By contrast, the refractive index of diamond is directly proportional thereto. Materials with high refractive indices, close to that of diamond, are typically opaque, but transmission of light is

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essential for imaging and, consequently, to the claimed invention. The light spectrum used in the claimed invention, in contrast to D1 but like D3, is within the infra-red range and, therefore, not visible to the naked human eye. By taking into account the physical and optical properties of the two materials, the claimed invention envisages heating selenium to a pre-determined temperature range so as to reduce it to liquid or molten state, immersing the diamond therein while matching the refractive indices of diamond and selenium as closely as possible at a specific wavelength to enable transmission of light for imaging. Eventually, the purpose is to obtain images of the diamond and thereby detect inclusions.

56. In this factual context, the question arises as to whether the PSITA team, including the non-inventive material scientist, even if actively looking for an immersion liquid with a refractive index close to that of diamond, would combine the teachings of prior arts D1, D2, D3 and D14, either separately or in combination, with D4 and D5.

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While the gemologist member would be imputed with knowledge of prior arts D1-D3 and D14, the material scientist would be imputed with knowledge of D4 and D5. A question could be raised as to why the gemologist and material scientist cannot speak to each other and combine their respective knowledge to arrive at the claimed invention. Since the domain expertise of the material scientist is in all materials, information relating to this vast domain would be stored in her mind. While information relating to D4 and D5 is imputed to her, these pieces of knowledge would not be in the forefront of her mind, but would be stored therein along with much else pertaining to material science. The PSITA team would be looking for a transparent liquid with a high refractive index. Selenium is found naturally in a solid state and is opaque. D4 does not make any reference to use in the gemstone or diamond industry. Although the refractive index of diamond and selenium were known for decades, no one combined the two in this manner before. In the ultimate analysis, it boils down to this: would it be obvious to the PSITA team,

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which is looking for an appropriate transparent immersion medium, to consider the use of selenium as the immersion medium; consequently, pull Saker/D4, a 1952 academic publication, out of the material scientist's knowledge/memory bank; draw on the temperature and wavelength ranges specified therein; optimise the temperature range to ensure that the refractive indices of diamond and liquid selenium nearly match after taking note of the direct and inverse proportion in which the refractive indices of diamond and selenium, respectively, are impacted by changes in temperature; decide on the appropriate wavelength within the infrared band for effective imaging; and conclude that this is an improved method of detecting inclusions? Without the benefit of hindsight, I conclude that making this mosaic would not be obvious to the non-inventive PSITA team especially because D4 contains no reference to gemstones or their physical properties. Without making the mosaic, it should be noticed that the use of liquid selenium for the detection of inclusions would not have been obvious to the PSITA team and it

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would not be a case of merely working out the optimum temperature and wavelength ranges. Therefore, the principle laid down in *Genentech* may not apply.

Age of prior art

57. In spite of D4, D5 and even D8 being available for many decades and the search for improved methods of identifying inclusions being undertaken over a long period, the teachings thereof admittedly were not combined earlier with D1-D3 and D14 to arrive at the solution provided by the claimed solution.

58. By relying on *Apple* and *In re Rosenberger,* the opponents contended that the mere age of prior art cannot be the basis to conclude that the claimed invention is inventive, and that long felt but unmet need should be established. I agree that age of prior art is only a secondary consideration in obviousness analysis. In the preceding paragraphs, the nature of D4 and D5 was discussed. By taking the following into account: the age of said non-patent

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literature; inclusion detection in precious stones being undertaken without interruption over a substantial period; and the affidavit of Professor Oded Navon in this regard, I conclude that, without the benefit of hindsight, the non-inventive PSITA team would not combine prior art D1-D3 and D14 with D4 and D5 to arrive at the claimed invention. I am fortified in this conclusion by the fact that there is no discernible link between D1-D3 and D14, on the one hand, and D4 &D5, on the other. While D8 was relied on as a bridge, for reasons discussed extensively earlier, D8 teaches away and does not bridge the gap. As mentioned earlier, D5 also teaches away.

59. Thus, I am inclined to be persuaded by the opinion of Professor Oded Navon and not by that of Dr.Jayshree Panjikar. Without intending to treat it as anything more than relevant and mildly persuasive, I notice that several jurisdictions granted a patent to the claimed invention after considering some of the prior art discussed above. Since the Controller drew conclusions by adopting

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the hindsight approach to obviousness analysis, the impugned order is flawed and calls for interference.

Objection on the basis of Section 3(d)

60. An objection was raised by the ninth respondent that a patent claim for a new use of a known substance is excluded by Section 3(d) of the Patents Act. This objection was raised on the ground that selenium is admittedly a known substance and that the use thereof to detect inclusions, even if assumed to be novel and inventive, is excluded from patent protection. The second limb of Section 3(d) deals with "the mere discovery of any new property or new use for a known substance". Thus, the exclusion is limited to claims in respect of known substances. Here, the appellant does not make a monopoly claim relating to selenium. The monopoly claim is for a method of detection of inclusions in diamonds by *inter alia* immersing the diamond in an immersion medium substantially comprising selenium in liquid or molten state; maintaining a pre-determined temperature range; transmitting light of a specific

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wavelength range; capturing images of such diamond; and detecting inclusions from such images. This type of claim does not fall within the scope of Section 3(d).

Sufficiency and clarity

61. The last question is whether sufficient disclosure was made. The opponents contended that sufficient disclosure was not made on the grounds that the method of melting selenium was not disclosed. On this issue, I notice that no monopoly claim is being asserted over the method of melting selenium, and that the cited patent and non-patent literature also do not flag any specific or special concerns regarding such method. Therefore, the claimed invention cannot be refused grant on that ground. Lack of clarity and insufficiency of disclosure was also raised by pointing out that the recital in the claims is 'substantially comprising selenium' and not 'consisting of selenium', thereby creating ambiguity as to the other ingredients. Although it was contended that the request of the appellant to amend the claim to 'consisting of selenium' should not be considered

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at this belated juncture, I am of the view that once it is concluded that the claimed invention has an inventive step, there is no reason to reject such request merely on the ground of delay. Therefore, by accepting the objection of the opponents on this issue, I direct the appellant to amend independent claim 1 by replacing 'substantially comprising selenium' with 'consisting of selenium'. This, in turn, would impact all the other claims, which are dependent on claim 1.

62. The last aspect on sufficiency and clarity is the contention that the temperature range of 100°C to 400°C is unworkable in view of the fact that the melting point of selenium is 220°C. On this issue, I find that the complete specification and independent claim 1 also refer to selenium in a gel-like state. Scientific literature indicates that selenium becomes semi-solid at about 50°C. On that account, I am satisfied that the specification of a wider temperature range is justified.

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63. One final issue: I find that claim 4 discloses a method according to claim 3 wherein following the placement of the diamond in the molten material, the material is allowed to solidify to result in the diamond being encased in the solid. Although the complete specification contains a brief reference to this method, I am not satisfied that this method is sufficiently enabled for purposes of imaging, and thereby detecting flaws or inclusions. Therefore, I reject this claim.

64. For reasons set out above, the impugned order is set aside. Consequently, subject to the amendment of claim 1 by replacing the words 'substantially comprising selenium' with 'consisting of selenium' and the deletion of claim 4, the claimed invention shall proceed to grant. The claims shall be amended, renumbered and filed for such purpose.

15.04.2024

Index : Yes / No
Internet : Yes / No
Neutral Citation : Yes/ No

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SENTHILKUMAR RAMAMOORTHY J.

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To

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