A clarification on patent insufficiency in Singapore:
***IIa Technologies Pte Ltd v Element Six Technologies Ltd* [2023] 1 SLR 987; [2023] SGCA 5**

I. Executive Summary

Both parties to this case – Element Six Technologies Ltd ("**Element Six**"), a member of the Element Six Group,[1] and IIa Technologies Pte Ltd ("**IIa**") – are competitors in the production of synthetic diamonds grown using chemical vapour deposition ("**CVD**").[2]

Element Six alleged that IIa had infringed its Singapore Patent No 115872 ("**SG 872**").[3] Element Six relied on three samples of diamonds labelled "Sample 2", "Sample 3" and "Sample 4" (each a "**Sample**", and collectively the "**Samples**"), allegedly purchased from IIa or its related entities or distributors. Element Six claimed that: the Samples were made from CVD diamond material synthesised by IIa; and that to make them, IIa must have used the method of growth taught under SG 872: without the new CVD growth process taught within SG 872, the single crystal CVD diamond material manufactured would not display the properties defined in the product claims of SG 872, and which are indicative of a high-quality diamond.

IIa denied the claims, and further disputed the validity of SG 872; it also sought the revocation of SG 872. While the High Court ("**HC**") upheld the validity of SG 872, the Court of Appeal ("**CA**") disagreed, holding that the patent was not sufficiently clear and complete. In doing so, the CA clarified certain aspects of patent law regarding classical insufficiency and uncertainty (as explained below).

II. Material Facts

A. Technical background

Element Six sought to produce CVD single crystal diamonds for specific industrial applications. Allegedly, such diamonds could only be produced using the processes claimed in SG 872.

SG 872 asserted the invention of a new optical quality synthetic single crystal CVD diamond material, which possessed one or more of the properties stated in the patent, and the method for its production. It contained both *product* claims and *process* claims. A product claim asserts exclusive rights over a new invention, such as new machines, while a process claim covers new activity, such as a process or method of manufacturing.

Product claims. SG 872 covered a new optical quality synthetic single crystal CVD diamond material. The main product claim was "**Claim 1**", which indicated a CVD single crystal diamond material showing at least one of the properties specified in Claim 1, for instance the property of "**optical birefringence**." Claim 1 (in part) asserted a monopoly over single crystal CVD diamond material with low birefringence.

Process claims. The main process claim under SG 872 concerned "**Claim 62**", which specified a method of producing low-strain single crystal CVD diamond material that would exhibit certain optical properties (as defined in SG 872). This included adding 300ppb to 5ppm nitrogen to the synthesis atmosphere (the "**Claim 62 Nitrogen Range**"). Claim 62 claimed that this method of using the Claim 62 Nitrogen Range

[1] The Element Six Group is a member of the De Beers Group, an international diamond business and diamond producer and a subsidiary of Anglo American plc, a global mining company.

[2] At its simplest, under this process, a substrate (or diamond seed) is placed in a reactor containing a mixture of gases. Upon exposure to high energy, the gaseous molecules break up into plasma containing carbon (or "C") atoms. The C atoms are then deposited on the substrate, growing the synthetic diamond layer by layer.

[3] In the lower court, Element Six alleged that Ila had infringed two of its patents, one of which was SG 872. The other patent, Singapore Patent No 115508, was declared invalid by the lower court. This was not contested by either party on appeal.

was novel because it ran contrary to previous thinking in the production of single crystal CVD diamonds (i.e. that adding nitrogen to the synthesis atmosphere in the CVD reactor would have a deleterious effect on the quality of the diamond produced). The other process claims under SG 872 were Claims 63 to 71 (the "**Other Process Claims**").

B. Patent law regime

The patent regime has two main aims. *First*, it seeks to encourage innovation by granting the patentee a monopoly over the patented invention for a limited period (meaning the right to exclude others from using that invention). To ensure that patents effectively incentivise innovation in furtherance of the first aim, the patent regime only grants monopolies over deserving inventions: i.e. those which are *novel*, contain an *inventive step*, and are *capable of industrial application*. The patent may be revoked if any one of these requirements are not met.

Under the novelty requirement, the invention must be new (i.e. does not form part of the state of the art). , Under the "inventive step" requirement, an invention shall be taken to involve an inventive step if it is not an obvious step from the perspective of a person "skilled in the art" (a "**PSA**"), having regard to any matter which forms part of the state of the art (meaning a piece of prior art) as at the priority date of the invention (which by default is the filing date of the patent application).[4] A PSA is someone in the field of technology relevant to the invention in question and who possesses, amongst other characteristics, common general knowledge in the art. A PSA also has a practical interest in the subject matter of the patent and is likely to act on the directions given in it with the desire to make the directions in the patent work. He is a reasonably intelligent but unimaginative workman or technician who has the skill to make routine workshop developments, but not to exercise inventive ingenuity or think laterally.

Second, the patent regime seeks to disseminate knowledge. This is achieved by requiring the patentee to teach, in the patent specification, how to work or make the asserted invention. This is so that the public, following the expiry of the limited-term monopoly, may freely use or build on the invention in light of the teachings in the patent. Knowledge dissemination is advanced by the "sufficiency" or "enabling disclosure" requirement, which provides that the patent specification must disclose the invention in a clear and complete manner for it to be performed by a PSA.

The court dons the mantle of the PSA when determining related claims. The court must also first construe the patent claims before undertaking the substantive analyses mentioned above. Claim construction identifies the invention that is said to be novel, non-obvious and sufficiently disclosed, and in respect of which the monopoly is claimed.

C. HC Proceedings

In the HC, IIa denied any infringement of SG 872. IIa further disputed the validity of SG 872 and sought its revocation. However, the HC found that SG 872 was valid and declined to revoke it. It also found that both Claim 1 and Claim 62 had been infringed by IIa and ordered (among other things) the delivery and/or destruction of all products or articles which infringed SG 872. IIa appealed, based largely on claims that SG 872 did not fulfil the sufficiency requirement in the Patents Act (Cap 221, 2005 Rev Ed) ("**Patents Act**").

III. Issues on appeal

On appeal, the CA considered the following main issues:

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[4] The default position is that the filing date of the application is taken to be the priority date. Alternatively, the date of filing of an earlier patent application can also be taken as the priority date in certain circumstances.

(a) whether the product claims in SG 872 covered a single product or a range of products;
(b) whether any or all of the claims in SG 872 were invalid due to insufficiency; and
(c) whether SG 872 should be revoked in its entirety.

A. Single product or range of products

IIa argued that the product claims in SG 872 covered *one* product, "a CVD single crystal diamond material having one or more of the specified parameters". The "different ranges and combination of properties in each product claim" were therefore variations of the same product grown from the one process in SG 872. Conversely, Element Six argued that each product claim covered a *class* of products. The CA agreed with Element Six and held that each claim, when properly construed, asserted a monopoly over a *class* of single crystal CVD diamond materials.

The CA stated that Claim 1 could be infringed by various types of single crystal CVD diamond materials, each with a different combination of the physical properties defined under Claim 1. This was clear from the plain language of Claim 1, as fortified by the description of the invention in the specification of SG 872. Further, the language of the claim must be construed through the eyes of a PSA. In this regard, the CA accepted evidence by Element Six's expert witness, who testified that the limbs in Claim 1 covered optical properties which "may be related but remain different", and that "[m]any are not directly derivable one from another".

The CA held that the product claims subsequent to Claim 1 also covered a range of diamonds. The CA stated that once a subsequent product claim incorporated Claim 1 (which many did), it would assert a monopoly over a range of products, since any diamond within the class of products in Claim 1, which also fulfilled the additional parameter expressed in the subsequent claim, would then fall within that subsequent claim. Further, where the additional parameter in the subsequent claim itself is expressed as a range of values, the claim would cover a range of products. By defining parameters using ranges of values or incorporating claims which do so, each product claim in substance claimed or asserted a monopoly over a range of single crystal CVD diamonds, each with a different combination of physical properties.

B. Invalidity due to insufficiency

(i) What is insufficiency

The sufficiency requirement lies at the heart of what is sometimes called the "patent bargain". As stated above, the inventor/patentee is rewarded with a limited-term monopoly over the claimed invention, in exchange for enabling a PSA to work the claimed invention and dedicating it to public use after the monopoly has expired. The patent bargain breaks down if the patent does not sufficiently teach a PSA how to perform the invention, in which case it makes little sense to reward the inventor/patentee with a monopoly. As such, the failure to satisfy the sufficiency requirement is grounds for patent revocation.

There are two steps to this sufficiency assessment. The *first step* involves identifying the invention and deciding what it claims to enable the PSA to do. The *second step* asks whether the specification enables him to do it. Indeed, the court can only ascertain whether the disclosure has been sufficient after first ascertaining what needs to be disclosed. Both steps require the court to don the mantle of a PSA possessing common general knowledge of the art. Where the invention is a process, enablement at the second step requires that process to be carried out by the PSA; where the invention is a product, enablement requires the PSA to be able to make that product.

The patent need not set out every detail necessary for the performance of the invention across its entire scope; the patentee can leave the PSA to employ his skill and common general knowledge to work out

what needs to be done. However, the PSA must not be expected or required to exercise inventive ingenuity or exert undue effort in order to perform the invention across its entire breadth.

Where there is a claim for a class of products, the class of products is enabled only if the PSA can work the invention in respect of all members of the class. The specification can show that this is empirically demonstrated or disclose a principle which can reasonably be expected to apply across the class.
The CA stressed that a patent system which allows the inventor/patentee to monopolise more than that which he has sufficiently enabled may unduly stifle research, contrary to its primary aim of encouraging innovation. Hence, even where a patent specification is clear and complete enough to teach a PSA how to perform part of the claimed invention, that does not justify a monopoly over the entire breadth of the invention and the patent may be revoked, pursuant to section 80(1)(*c*) of the Patents Act.

The CA also reiterated that insufficiency (whether under classical insufficiency or uncertainty) remains a single ground of revocation under section 80(1)(*c*) of the Patents Act. *First*, as a matter of logic, a PSA can only be said to know how to perform the invention if he knows what steps he needs to take to arrive within the claimed invention and knows how to determine if he has in fact obtained a product or worked a process within the scope of the claimed invention. *Second*, the sufficiency requirement seeks to ensure that others would be able to work the invention and benefit from it when it falls into the public domain following the expiry of the patent, a benefit which would not exist if the PSA does not know whether he is working the invention. If so, the patentee has not fulfilled his end of the patent bargain and ought to be denied a limited-term monopoly over the claimed invention. *Third*, a patentee filing a patent application would in essence be asking the State to grant it a property right. It therefore behooves the patentee to properly define when that property right has been infringed so that others would know how not to trespass.

(ii) Classical insufficiency vs uncertainty
There are two accepted methods of insufficiency of a patent under Singapore's patent regime.[5]

The first is known as "**classical insufficiency**". This is where the patent specification is not clear and complete enough to enable the PSA to perform the invention across the whole breadth of the claim(s) without an undue burden. Regarding the concept of an "undue burden", the CA reiterated that the patent specification need not set out every detail necessary for performance, and can leave the PSA to use his skill to perform the invention, including using ordinary methods of trial and error which involve no inventive step. However, the PSA must be able to perform the invention "without prolonged research, enquiry and experiment". Further, the examples in the patent specification may be taken into account when determining whether there is sufficiency. In making this evaluation, the court will have to assess the steps which would be necessary for the PSA to take under the patent's specification to carry out the invention.

The second is based on "**uncertainty**", where the PSA does not know how to determine whether a particular product or process is within or outside the scope of the claim, even after employing the common general knowledge and applying the normal process of claim construction. Uncertainty is a distinct objection from classical insufficiency: *uncertainty* is concerned with whether the PSA, after following the teachings in the patent specification, can tell whether the product obtained, or process worked, falls within the scope of the claim, while *classical insufficiency* is concerned with whether the

[5] The CA decided to leave open the applicability in Singapore of a third concept, *Biogen* insufficiency, for determination in a future case.

patent specification sufficiently teaches the PSA how to obtain the product or work the process that is the subject of the claim.

(iii) SG 872 invalid due to classical insufficiency

IIa argued that Claim 62 (the main process claim under SG 872) was insufficient, as the patent specification failed to teach the "novel" growth process clearly and completely enough for it to be performed by a PSA, including the "ranges of temperature, gas flow rate or methane concentration" that would yield the diamond material. These variables, and any other variables in the patented CVD growth process (other than the concentration of nitrogen), were termed the "**Other Growth Conditions**". In other words, it presented the PSA with "a classic undue burden" to find out what Other Growth Conditions were necessary to obtain a specific type of diamond which met the desired product claims (a "**SG 872 Diamond**").

IIa further argued that it was not enough to point to the examples given in SG 872 because these "do not support a claim of the breadth of claim 62". As a result, the PSA was allegedly "left with a long and extensive research project to find out what ranges of these other process parameters are required" to obtain the relevant diamond material.

The CA agreed that Claim 62 did impose an "undue burden" on the PSA because:

(1) the Other Growth Conditions would affect the quality of the CVD diamond produced;

(2) the specification of SG 872 (including the examples therein) merely provided a starting point for an onerous research programme;

(3) experimental data (although not adduced in the case) was unnecessary to ground a classical insufficiency challenge; and

(4) Element Six did not prove that the manner of calibrating the Other Growth Conditions in order to produce a CVD diamond of a particular quality formed part of the common general knowledge which need not be taught by SG 872.

(1) The Other Growth Conditions affected quality. The CA determined that under Claim 62's own language, in order to provide sufficient enablement for the PSA across its entire breadth, Claim 62 must teach the PSA to produce every diamond falling within each of the product claims in SG 872 (which themselves cover a range of diamonds), or any combination of the product claims. It was indeed proven by both parties' experts, and accepted in Element Six's own submissions, that the Other Growth Conditions would affect the quality of the CVD diamond produced, which in turn would affect whether the single crystal CVD diamond fell into one or more of the product claims in SG 872. The CA concluded that the Other Growth Conditions did affect the strain in the diamond that was eventually grown and it was thus necessary for the PSA to determine the precise values of the Other Growth Conditions to use in order to grow a CVD diamond of a particular quality.

(2) Specification of SG 872 merely provided a starting point. The CA determined that none of the process claims provided directions on the precise values the PSA should use for the Other Growth Conditions, so as to produce diamonds with particular characteristics satisfying one or more of the product claims. This resulted in a need for the PSA to determine the Other Growth Conditions, which in turn placed an undue burden on the PSA to work the entire breadth of Claim 62.

Similarly, the description in the patent specification indicated ranges of values for some of the Other Growth Conditions (the "**Ranges of Values**"), such as "gas pressure" and "plasma power density". It also identified one main set of specific values for the Other Growth Conditions in Example 1 (the

"**Example 1 Other Growth Conditions**"). However, SG 872 did not expressly state which claim(s) the resulting diamond would satisfy.

First, the CA determined that guidance on the Other Growth Conditions provided in SG 872 – both the Ranges of Values and the conditions provided in Examples 1, 9 and 14 – were inadequate. The Ranges of Values only concerned two variables: "gas pressure" and "plasma power density". There was no guidance on other variables such as gas flow, temperature and the concentration of the remaining gases in the source gas. Even for the ranges provided, there was no teaching on how to determine where within the range the PSA should operate so as to produce a CVD diamond with a particular characteristic or combination of characteristics.

Second, the CA stated that the determination of the specific values of the Other Growth Conditions required to produce a diamond of a particular quality was a complex process. The Other Growth Conditions and the nitrogen concentration in the source gas were interrelated, since the specification of SG 872 revealed that several of the Other Growth Conditions affected the appropriate concentration of nitrogen to be used. Despite this, there was no exposition on the nature of the relationships between the Other Growth Conditions and the appropriate nitrogen concentration, or how these relationships should be taken into account when determining the values of the Other Growth Conditions. The specification also recognised that the relationships between nitrogen concentration and the Other Growth Conditions were "best illustrated by way of example", but failed to provide these examples. The PSA would thus be left to undertake extensive research to uncover these relationships to uncover the relationships between the variables in the growth process depending on the physical properties sought in the diamond grown.

Third, the CA stated that the entire growth process and resultant diamond material were sensitive to changes in any of the Other Growth Conditions. It was not possible for the PSA to vary the Other Growth Conditions without any material consequences to the quality of the diamond produced. The PSA would be unduly burdened with the need to experiment with innumerable combinations of Other Growth Conditions across the entire Claim 62 Nitrogen Range, so as to determine which combination would result in a SG 872 Diamond. This was an onerous research programme for the PSA because there were many values for each variable to experiment with, all while balancing the (undefined) relationships between the Other Growth Conditions and appropriate nitrogen concentration.

Finally, the CA noted that an undue burden is imposed if a starting point for an onerous research programme is all that a patent's specification affords. Neither the Range of Values nor the specific values for the Other Growth Conditions were adequate, since they at best provided a starting point for an onerous research programme.

(3) Experimental data was unnecessary for a classical insufficiency challenge. Element Six pointed out that IIa had failed to perform experiments to support its case on insufficiency. However, the CA determined that experimental data was not needed to conclude that the patent told the PSA nothing about how to obtain the appropriate combination of the Other Growth Conditions and nitrogen concentration to grow a single crystal CVD diamond material, with characteristics satisfying one or more of the product claims. Even if the PSA, in attempting to perform Claim 62, happened to stumble on the appropriate combination and grow the low-strain diamond desired, such a result would not be due to the teaching in SG 872 but would be due to the PSA's own luck and efforts. In these circumstances, it would be unfair to allow a patentee to take credit for something the patent does not sufficiently enable and which requires the PSA to expend undue effort to uncover.

(4) Calibrating the Other Growth Conditions was not common general knowledge. Element Six argued that the PSA "would know how to adjust the regular reactor conditions such as temperature and gas flow rates". The CA disagreed, stating that while knowledge that the Other Growth Conditions did affect the quality of the diamond grown may have been part of common general knowledge, how to calibrate all the Other Growth Conditions so as to produce an SG 872 Diamond of a specific quality was not common general knowledge at the filing date, as there was no evidence to support this.

The Other Process Claims were likewise classically insufficient as they also required an understanding of how to calibrate the Other Growth Conditions in order to grow a diamond of a specific quality, yet were devoid of such guidance.

Finally, since the Other Process Claims were classically insufficient, the CA held that the PSA would again be faced with an undue burden to grow diamonds across the entire range of products claimed in each product claim. The CA hence determined that *all* the product claims were also invalid.[6]

C. Revocation of entirety of SG 872 due to insufficiency

As the CA found that all claims in SG 872 were invalid for classical insufficiency, it allowed IIa's counterclaim and revoked SG 872 in its entirety under section 80(1)(*c*) of the Patents Act. Nonetheless, the CA further considered whether any or all of the claims in SG 872 were invalid due to *uncertainty*.

It was undisputed by either party that the specification of SG 872 directs a PSA to use an optical microscope-based imaging system known as the "Metripol" or "a similar instrument with similar resolution" to determine certain values.[7] Apart from the Metripol, there was no other instrument known to the PSA to be similar to the Metripol at the relevant time. However, the issue was that the data from the Metripol, on its own, did not tell the PSA whether the optical retardation (δ) value of a diamond fell within the "SG 872 First Order" (the "**Metripol Uncertainty Problem**").[8] IIa thus argued that the Claim 1 and hence SG 872 were insufficient in their entirety because, due to the Metripol Uncertainty Problem, the PSA would not be able to tell whether the δ value of a particular single crystal CVD diamond was within the SG 872 First Order and hence within the scope of the asserted monopoly. IIa further argued that if Claim 1 was found to be insufficient due to the Metripol Uncertainty Problem, SG 872 as a whole should be found invalid for insufficiency. Element Six countered that there were four solutions to the Metripol Uncertainty Problem which the PSA would know of (as explained below).

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[6] While the CA noted that the validity of a product claim was not necessarily tied to that of a related process claim as a matter of law, it still reached its findings on the facts of the case as SG 872 did not teach an alternative method of producing a SG 872 Diamond apart from Claims 62 to 71, and the respondent did not suggest that there was a method within the PSA's common general knowledge to grow SG 872 Diamonds.

[7] The Metripol has a polarizer that rotates in fixed multiples of different angles. At each angle, polarized light passes through the specimen and is captured by a camera. The Metripol then calculates the intensities of light received by the camera at these different angles and thereafter computes |sin δ|, a function of δ. According to SG 872, the spatial variation of |sin δ| can be appreciated from the images generated by the Metripol and that for each sample, sets of |sin δ| images are to be recorded for analysis. After computing |sin δ|, the Metripol produces colour-coded images of the material, where different colours represent different |sin δ| values at any place within the image. This is referred to as the Metripol |sin δ| Map.

[8] Low birefringence is quantified as a sample: (a) remaining in the "first order" (δ does not exceed π/2); and (b) with the modulus of the sine of the phase shift (that is, |sin δ|) not exceeding 0.9. Low birefringence is quantified in Claim 1iii) as a sample: (a) remaining in the "first order" (δ does not exceed π/2) (the "**SG 872 First Order**"); and (b) with the maximum value of Δn[average] (that is, the average birefringence across the thickness of the sample) not exceeding 1.5×10^{-4}. The Metripol Uncertainty Problem arises because the Metripol does not calculate δ. The value of |sin δ| that it generates corresponds to many δ values and only one of these δ values lies within the SG 872 First Order. Hence, the PSA cannot derive a corresponding δ value from the |sin δ| value alone and will not know whether the δ value of a diamond is within or outside the SG 872 First Order.

The CA held that Element Six's case relating to the Metripol Uncertainty Problem was in essence an objection of uncertainty. It further held that all claims under SG 872 were invalid due to uncertainty.

The CA stated that by highlighting the Metripol Uncertainty Problem, IIa had produced sufficient evidence to suggest that the PSA would not have been able to determine if the optical retardation (δ) was within the SG 872 First Order for a particular single crystal CVD diamond. The evidential burden thus shifted to Element Six to show that the PSA would know of a workable solution to overcome this and would be able to ascertain whether δ is within the SG 872 First Order insofar as single crystal CVD diamonds are concerned. This means that Element Six must show that any of the four solutions suggested fulfil two cumulative criteria: it is a workable solution for ascertaining whether δ is within the SG 872 First Order where single crystal CVD diamonds are concerned; and it is a solution that would have been known to the PSA, either because it is taught in the patent, or it is part of the common general knowledge.

However, the CA decided that the four solutions raised by Element Six did not fulfil either or both of these criteria.

(1) Gap Theory.[9] This theory proposed interpreting the data obtained from the Metripol using the PSA's knowledge of the nature and characteristics of single crystal CVD diamond material. The CA held that, even assuming that the Gap Theory was sound, Element Six had not established that the theory was a part of the PSA's common general knowledge at the relevant time. Furthermore, even if the Gap Theory was part of the PSA's common general knowledge, Element Six had failed to discharge its evidential burden of proving that the Gap Theory was a workable test.

(2) Cross-Polariser Method.[10] The CA held that the Cross-Polariser Method was an inherently imprecise and inconclusive method as it required a qualitative judgment of the shade of colour perceived in the cross-polarised image.

(3) Using a standard compensating plate with white light; and (4) carrying out measurements using the Metripol at two or more wavelengths. (Solutions 3 & 4 are collectively referred to as the "**Glazer 1996 Solutions**"). The CA rejected the Glazer 1996 Solutions as it was unclear whether the PSA would have known of them. Element Six had also not shown that the Glazer 1996 Solutions were workable tests for the purpose of determining whether a particular single crystal CVD diamond material had a δ value within the SG 872 First Order. The scientific paper in which the Glazer 1996 Solutions were found ("**Glazer 1996**") did not indicate that the Glazer 1996 Solutions applied specifically to single crystal CVD diamonds.[11] Glazer 1996 also did not specifically propose the Glazer 1996 Solutions as methods to ascertain the first order, but instead as methods to ascertain how many "orders" had been passed through. Further, the expert evidence given did not support any of these claims.

The CA further determined that the PSA trying to perform the claimed invention would not know which test to apply, to ascertain whether the δ value of a particular single crystal CVD diamond material remained within the SG 872 First Order. Although this uncertainty only affected one out of two integers

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[9] The Gap Theory was a theory proposed by Dr Glazer, one of Element Six's experts. This theory determines whether δ remains in the SG 872 First Order by looking at whether there is a gap between the maximum value of |sin δ| and the value of 1. If this gap exists, the range of δ values must be within the SG 872 First Order. If this gap does not exist, the range of δ values must have extended beyond the SG 872 First Order.

[10] According to Element Six, if the cross-polarised image of the diamond sample only shows black, white or grey contrasts, it indicates that δ is within the SG 872 First Order.

[11] The Glazer 1996 Solutions are found in a scientific paper written by A M Glazer, J G Lewis & W Kaminsky in 1996 ("**Glazer 1996**").

in limbs ii) and iii) of Claim 1, respectively, the result was that the PSA would not be able to determine whether a particular single crystal CVD diamond material satisfied either limb ii) or limb iii). The CA hence found that Claim 1 was invalid for insufficiency.

Finally, IIa argued that if Claim 1 was found to be insufficient due to the Metripol Uncertainty Problem, SG 872 as a whole should be found invalid for insufficiency. The CA agreed with IIa as all the other claims, had defined the scope of their monopoly by reference to Claim 1. Hence, failure to enable part of the monopoly in Claim 1 would result in the same in respect of all other claims in SG 872, since the PSA would not be able to tell when Claims 1ii) and 1iii) had been satisfied.

The CA therefore concluded that the uncertainty affecting limbs ii) and iii) of Claim 1 was another ground for allowing IIa's counterclaim and revoking SG 872 in its entirety under section 80(1)(*c*) of the Patents Act.

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